Call-A.P.P.L.E.™

Volume 8, Number 5
May 1985

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Do You Recognize This Keyboard?

INSIDE:

- Unlocking the Dvorak Keyboard
- The Apple *IIe* Enhancements
- Secrets of Apple Writer's WPL

MACINTOSH SECTION:

- Creating Customized Icons
- Mac Word Processing Tips
- Review of "Mac Spell Right"

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- Hard Disk Review
- Spreadsheet Statistics
- New Products
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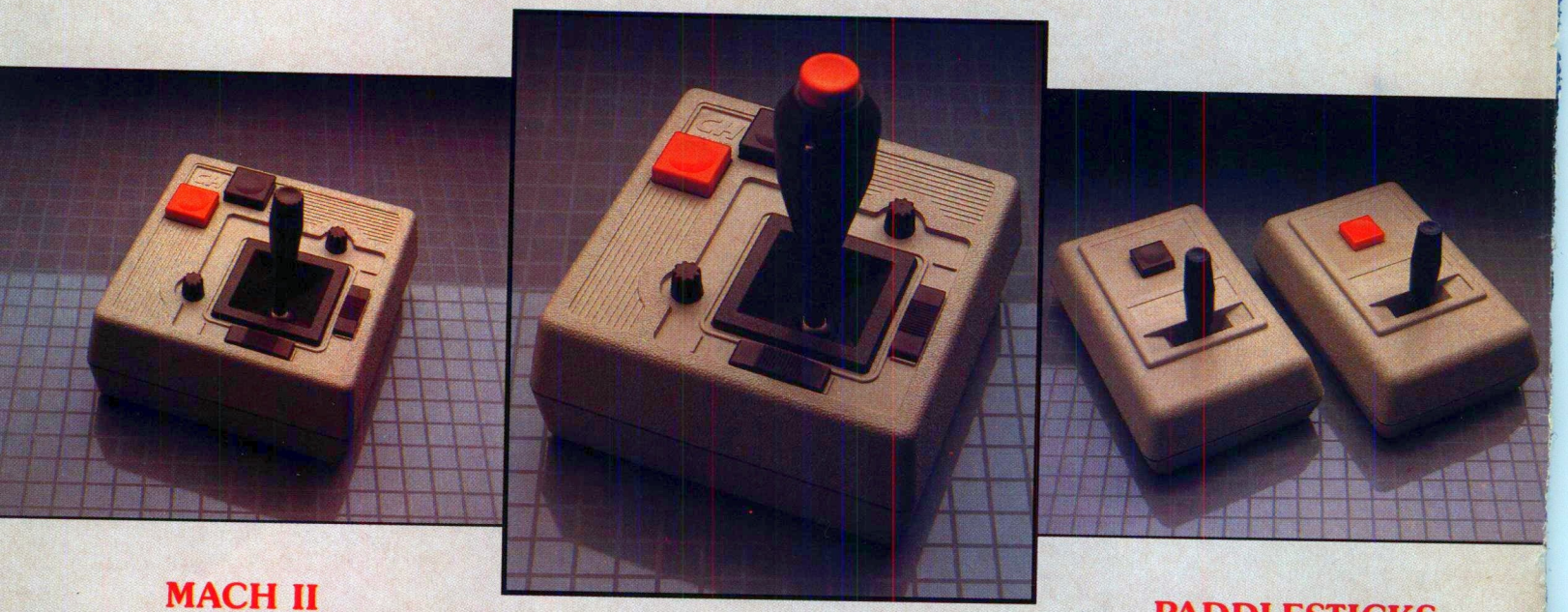

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Circle 37 on Reader Service Card

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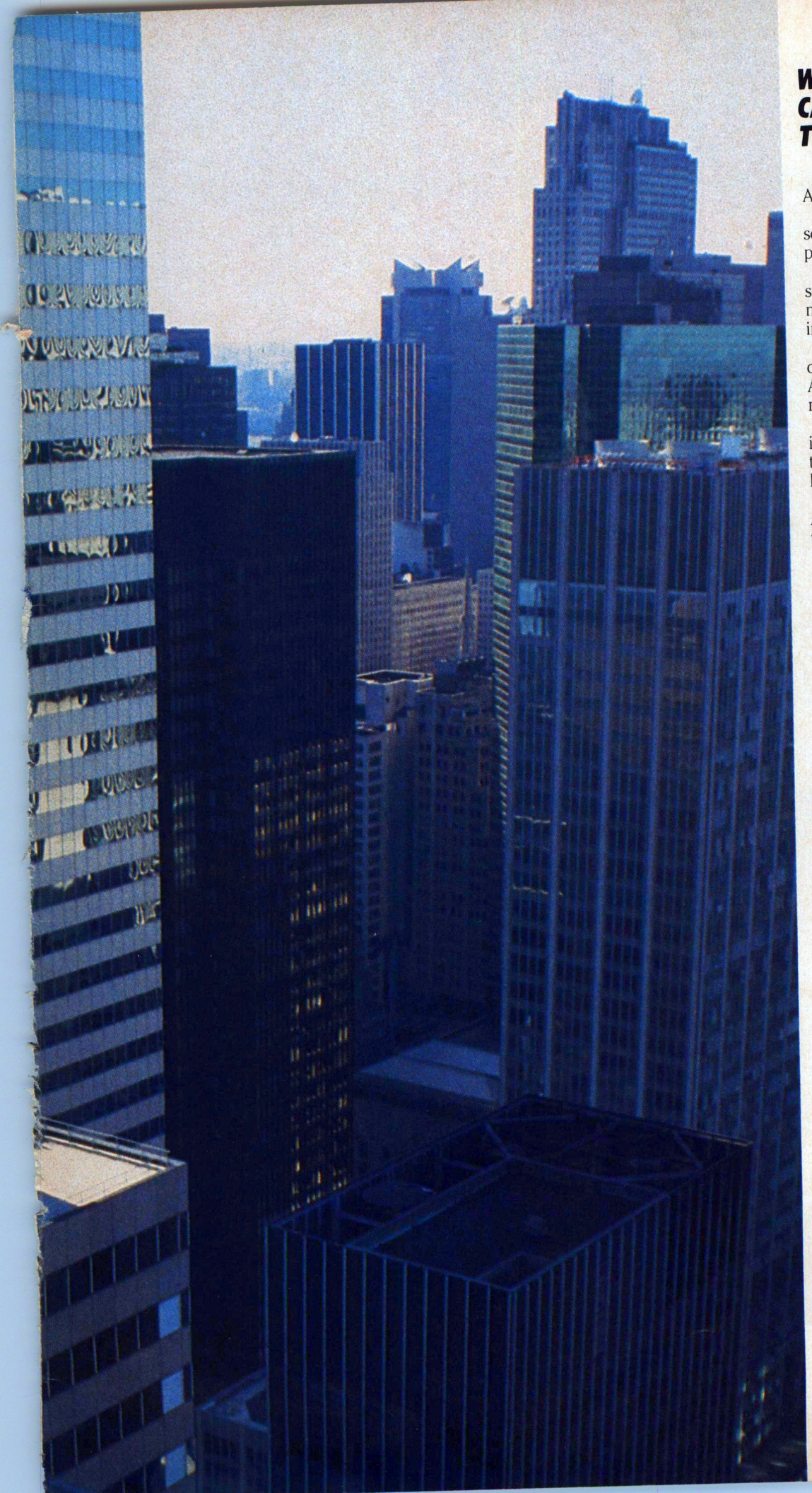

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Volume 8, Number 5 — May 1985

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About the Cover

An underutilized feature of the Apple //c and //e, the Dvorak keyboard—shown here in its American version—can increase your input up to Express speeds.

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Features

10 **A Different Way to Type**
Greg DeWilde
Unlocking the Dvorak keyboard in your //e

16 **The Apple //e Enhancements**
Ken Kashmarek
Making the //e more compatible with the //c

18 **The Secrets of Apple Writer's WPL**
Richard Loggins
Using Word Processing Language to increase the power of Apple Writer

21 **THE Spreadsheet Sheet: Data Analysis #11—Multiple Regression**
Jeffrey M. Jacques
Rounding out our Spreadsheet statistics series

30 **Hardware Review: "The Sider" Hard Disk**
Charlie Stillman & Butch Greathouse
Mega-memory at an affordable price

Macintosh

32 **Software Review: "Mac Spell Right"**
Douglas Fraser
Spelling checker and thesaurus accessible from MacWrite

33 **MacinTips—I Like Ike-ons**
Ken Watters
Creating your own Mac screen icons

36 **Something Over 32 Bits**
Dave Redhed
Software and hardware information for Mac and Lisa (oops. Mac XL) users

Letters

38 **A.P.P.L.E. Doctor**
Bruce F. Field
From the operating (system) room

40 **Write –A.P.P.L.E.**
Readers' forum

Departments

8A **A.P.P.L.E. Co-op New Products**
ThunderScan, and a new disk-based index for all Call –A.P.P.L.E. articles.

6 **The INNER CIRCUIT**
Don Elman
Apple II transformations

6 **Planting a Seed**
Peter C. Weiglin

9 **Member Billboard / Member Services**
Don Elman
Co-op notes

43 **The Marketplace**
New products and developments for all Apple computers

46 **Unclassifieds**

ADVERTISER INDEX

Advanced Business Technology 22
Applause 8
Applied Engineering . . . 5, 11
Apricorn 48
AST Research 41
Axlon 37
B & D Electronics 29
Beagle Bros 24,25
Blankenship Associates 40
CH Products 2
Checkmate Technology 13
COMPUTE! Publications 45
Data Chief 34
David Data 14
Development Devices . . . 47
Digital Vision 34
First Class Peripherals 31
Folksoft 35
Interactive Microware 20
Korsmeyer Electronic Design 7
Laing Electronics 19
Orbital Systems 42
Prof. Jones 32
Roger Wagner Publishing 27
Soft Wear Company 42
Softkey 29
Sorcim/IUS 3
Southern California Research Group 15
Telephone Software Connection 43
10/10 Software 7
VF Associates 44
Woodchuck Industries 39

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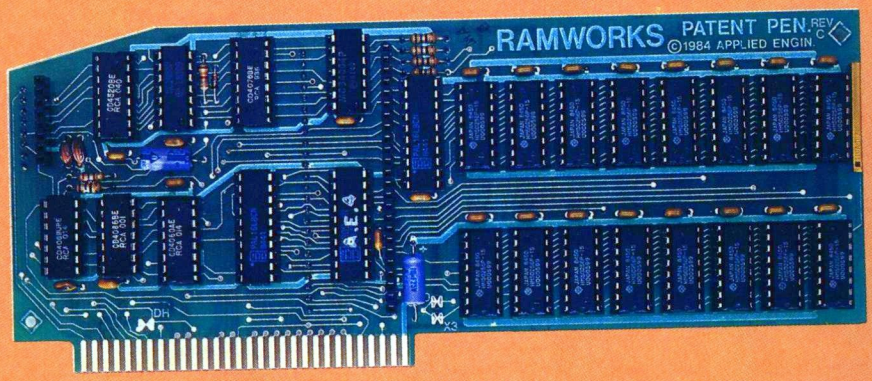

"In an industry as dynamic as the personal computer industry, it's inevitable that computers will be built with more and more memory. It's equally inevitable that newer, faster, more powerful software will be written to take advantage of that extra memory. Where does that leave you?"

Direct quote from new Apple IIe owners manual.

If you just want to play games with your Apple or write small BASIC programs, 128K is probably enough memory. But if you're using your Apple IIe for a serious purpose, you're going to need more memory. Applied Engineering has the answer: RAMWORKS. With RAMWORKS, you won't have to split files into several small pieces just to fit them into memory. You'll have ALL your data on line ALL the time.

RAMWORKS will automatically expand Appleworks, Magicalc, Magic Office System, PRODOS, Visicalc and hundreds of other programs. The simple fact is that RAMWORKS is compatible with more off-the-shelf software than any other RAM card.

A 64K RAMWORKS will ADD 46K to whatever you already have on your available desktop memory, a 128K RAMWORKS will ADD 91K, a 256K RAMWORKS will ADD 182K, a 512K RAMWORKS will ADD 364K and a 1 meg RAMWORKS will give you nearly an 800K DESKTOP. But RAMWORKS does more than just increase the desktop memory (as if that weren't enough). With RAMWORKS, Appleworks will be able to run up to 20 times faster. And now only RAMWORKS does this all automatically with no need for any optional software.

When you have a RAMWORKS card, you can have enough memory so that the entire Appleworks program will be loaded into the computer. This greatly increases the speed at which Appleworks operates because the disk drive operates at 300 RPM. RAMWORKS operates at the speed of light!

RAMWORKS just plugs in and clear instructions show how to plug more memory chips into RAMWORKS as your needs increase.

For only $129 an RGB option can be added to RAMWORKS to give you double high resolution color graphics and sharp 80 column text on any Apple compatible RGB monitor. The RGB option does not take up another slot, but rather it plugs into RAMWORKS. You can order the RGB option with your RAMWORKS or add it on at a later date.

RAMWORKS has taken the "waiting" out of computing. Floppies and hard disks are OK for long term storage. But they fall far short as on line storage. If you are using high level languages, spelling checkers, spread sheets, word processors, databases and other disk intensive software, RAMWORKS will save you time and make you more productive.

Now There's No Reason To Wait To Stop Waiting

Applied Engineering is passing along the cost savings that we've acquired through automated production. We're lowering the price on the more popular sizes of RAMWORKS, so now there's no reason to wait to increase your productivity. You'll be amazed at what you can do!

Features:

- ☑ 80 Column Text
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- ☑ User Expandable to 1 Megabyte
- ☑ Can Use 64K or 256K RAMS in any combination
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- ☑ RGB option
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The INNER CIRCUIT

Don Elman

Computer Surgery

What operation is more central than a facelift, more functional than an appendectomy, but less bloody than piercing ones ears? Why, the installation of Apple's new //e Enhancement Kit, of course! In fact, you might think of it as a sort of heart transplant without the risk—or even a brain replacement without the Frankensteinian overtones.

Essentially, Apple's newly-enhanced production version of the //e (should we refer to it as the //ee??) has now been given virtually the same internal micro-circuitry as the //c. This includes the 65C02 microprocessor—with its expanded instruction set and low power consumption—as well a few ROM routines that were not contained in the original //e, such as Mouse Text character generators. For about $70, owners of older //e's can have the appropriate chip-swapping performed at an Apple dealer.

The implications of this upgrade are even more interesting than the technical details. By giving the //e those new features that had been engineered into the //c, Apple seems to be acknowledging what its sales figures have indicated for a year—that the //e market continues to be strong across a broad range of users. Since it makes no sense to perpetuate even the slightest degree of incompatibility between the two models, this change works to the benefit of both users and software developers. Therefore, despite certain premature rumors of the Apple II's demise, that hearty machine once again appears to have sipped from an electronic Fountain of Youth.

In This Issue

Our cover story this month, **A Different Way to Type** by Greg DeWilde, reveals one existing area of //c - //e compatibility that few people are aware of—the built-in Dvorak keyboard option in the //e. Unlike the //c, however, the //e (even with enhancements) has no convenient switch to access the Dvorak alternative. This article provides one solution for those brave enough to attempt minor hardware surgery. In **The Apple //e Enhancements**, Ken Kashmarek explains exactly what the //e upgrade adds, and illustrates it with a Mouse Text demo program.

You'll also find an article on Apple Writer's WPL, the last installment of our series on Spreadsheet statistics, a review of The Sider hard disk system, and lots of useful, technical tips. Our information-packed Macintosh section covers topics ranging from how to create your own screen icons to a review of a convenient spelling checker and thesaurus. Overall, we hope this issue of **Call -A.P.P.L.E.** will help you keep your computer—whatever its age or configuration—in the best of health.

Planting a Seed

Peter C. Weiglin

Pity the Dealer?

We are witnessing a definite trend in the merchandising of personal computer materiel. Mass merchandising and discount selling methods are killing off the storefront computer dealers. The question is, will Apple the Company adapt to the new marketing in time to save itself?

You remember the storefront dealer: he's the one who charges list price for all hardware and most software. He has been supported in this policy by Apple and others, on the grounds that the price is justified by the customer support a real live dealer can give to a computer user. So, Apple prohibited mail order sales of its products, to assist the dealer in keeping and helping "his" customers. This was done amid pious declarations that mere price considerations should be outweighed by the dealer service and handling concerns that generate customer loyalty.

So what happened? The customers turned out not to be idiots after all: they continue to be most loyal to their own wallets, and to buy on the basis of price. And if an Apple can't easily be purchased at a "decent" price, why, what else is there? Even businesses, the old "captive" mainframe customers, turn to strict low-price buying of microcomputer stuff after about six months when their people learn the market.

Service? Well, you could guarantee a laugh at most meetings of computer owners by quoting the solemn "see your dealer" line from the Apple propaganda. So, people turned to independent servicers to get real help. Now, the independent service firms are being increasingly prohibited from access to the ROMS and other special parts that would allow them to fix an Apple //e. That means you're at the dealers' collective mercy, which makes the Apple a less attractive purchase. Service wasn't always the greatest, but it's even worse now that alternatives to dealer service are less available.

For many dealers, business has been bad since summer 1984, and no bright light of hope is on the horizon. A few chains have been buying up local outlets, but nationwide organizations haven't been able to do much

more than shave costs and become more "aggressive" in pricing. Sales are up, but margins are down.

Generally, Apple dealers have had it a bit better than non-Apple dealers, but even that seems to be evening out now. The dealers who are moving products are the ones who are "creatively" bundling and packaging; in short, the ones who are discounting prices most deeply. They are outraged at the loss of good margins, and many dealers seek to jealously guard what's left, including service parts.

Whether or not Apple's mail-order ban and other policies that restrict distribution of Apple products were mistakes is irrelevant today. Apple took a high-minded approach, and answered its critics by leaving the price vs. service decision up to the marketplace. The marketplace has made its decisions, and Apple closed a plant to work off excess inventory in April.

Y'see, the primary rule of marketing is that the customer, not the corporate ego, must be satisfied. Quite frankly, the dealers who haven't provided value for every dollar above rock bottom pricing are finding that the customers just aren't there. Those dealers who do provide value shouldn't be hampered by Apple policies that prop up (temporarily) the dealers who are indifferent.

The customers know the game a lot better than the marketing "experts" think they do.

Life in the Fast Lane, Slow Lane or Any Lane...

...is expensive when it comes to your car! A typical driver can spend $1000 or more on fuel per year driving 15-20,000 miles at 20 miles per gallon. Driving with a dirty air filter, low tire pressure and other problems can add $100-200 to fuel costs, plus higher repair bills and decreased reliability!! Minimizing those costs means keeping your car in top condition and spotting problems early. Using CAR-TRAK, your APPLE II can eliminate the guesswork from preventative maintenance and help avoid unnecessary repairs and fuel costs. CAR-TRAK is two programs in one! A SERVICE SCHEDULER reminds you of inspection and service requirements by date and mileage for up to 50 items per car. A PERFORMANCE ANALYZER graphically highlights suspicious changes in fuel consumption which may signal early trouble, and provides a number of SUMMARY REPORTS to help with business expenses, income taxes, and billing verification. It's simple and easy to learn and use! Put your APPLE II to work for you. Order CAR-TRAK by CHECK or M.O. for $39.95 plus $2.00 shipping and handling. (CA residents add $2.40 sales tax.)

CAR-TRAK requires II+, //c or //e w/48K.
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With just a local modem call from 300+ cities nationwide you can now converse with computer users from around the world on over 200 subjects from dating and petcare to the latest computer hardware/software design techniques. There's even a special category for Apple owners. The Solution is your window to Usenet, the established bulletin board system consisting of an expansive international network of mainframe and mini computers. Apple computer owners with modems can now participate in this exciting worldwide forum. previously not available to the public.

You're just not going to find anything anywhere that even comes close to equaling Usenet on THE SOLUTION. And with a bulletin board of this size and complexity it wouldn't be fitting to run it on top of just any operating system. UNIX allows you to modify the system environment to suit your needs and desires.

The Solution also offers an extremely sophisticated mail facility, allowing for personal communication with anyone on the network, around the globe. For you programmers, UNIX on THE SOLUTION is a dream come true. There are a number of software development firms who depend on The Solution to make their development process more efficient. Not to mention more fun. And The Solution is affordable, only costing what you currently pay for a long distance telephone call. (Telenet fees included).

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If you're like most computer users you've probably felt pain or discomfort in your arms, neck and shoulders while using your APPLE® computer for any length of time.

A recent study by the **United States Department of Health and Human Services**, showed the wrist rest to be the second most preferred component to provide maximum user comfort...second only to the chair!

The **OAK REST™** attaches easily to your Apple's existing cabinet screws, providing solid ergonomic comfort—helping to eliminate pain and fatigue. The OAK REST fits all APPLE II series computers—no special tools or modifications are needed.

You'll get a lifetime of comfort along with the beauty and warmth of **solid oak: (applause)** guarantees the OAK REST for the life of your computer!

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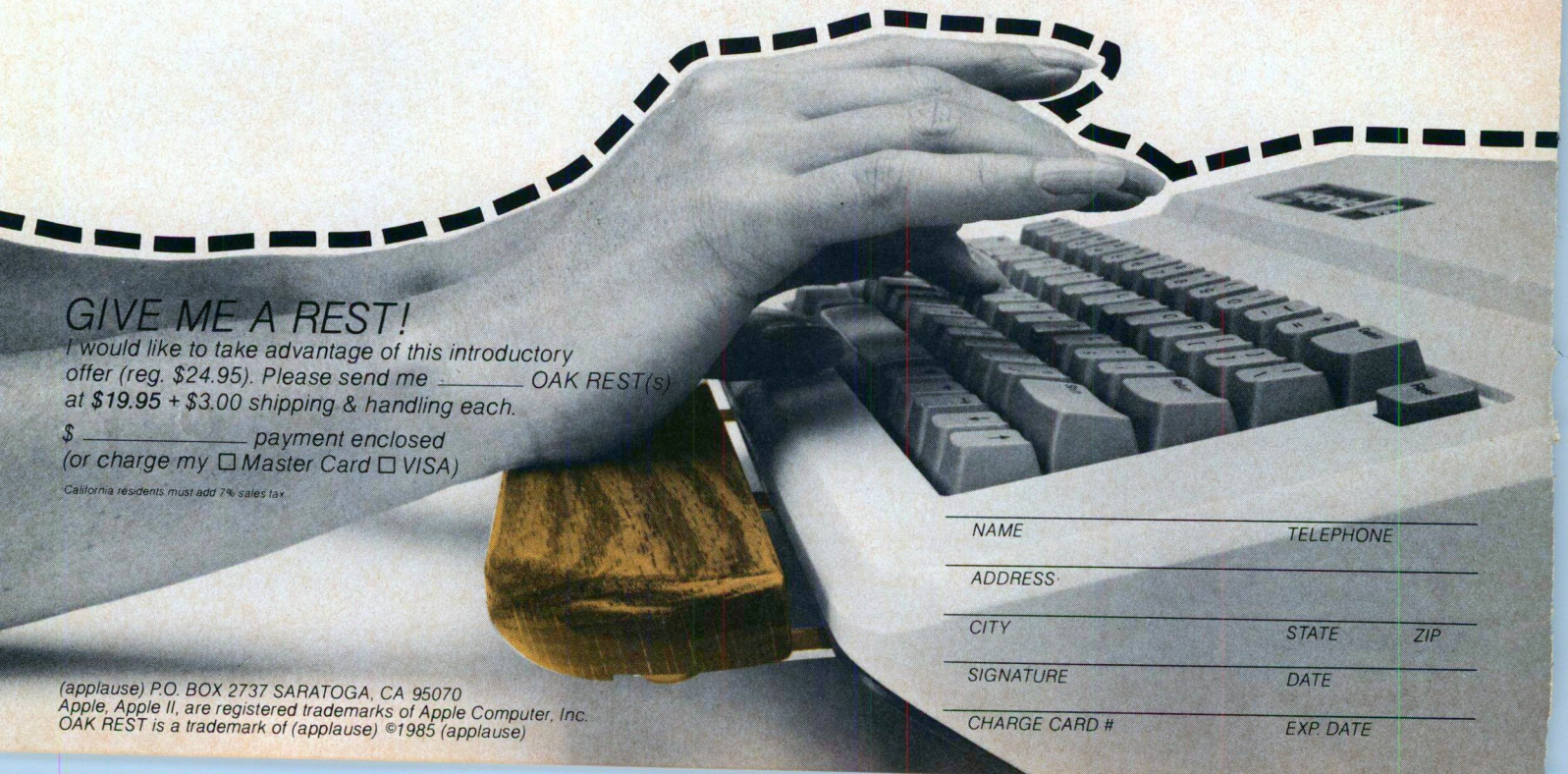

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A.P.P.L.E. Co-op New Products

..... for Macintosh .....

THUNDERSCAN

Andy Hertzfeld showed it to us in January and now we offer it to you. ThunderScan, the new optical scanning device that lets you produce astonishing graphics on the Macintosh that are useful to YOU! ThunderScan turns your Mac's Imagewriter printer into an IMAGE READER that will digitize any printed page and turn it into a detailed, high-resolution Macpaint document.

ThunderScan's features include:

- EASY SET-UP. Simply snap out the Imagewriter ribbon cartridge and snap in ThunderScan.
- Reproduce any black and white or color original (up to 8 x 10 on a 512k Mac) at over 200 dots/inch and in 32 shades of gray.
- Generate full page images or selected portions of a page.
- Enlarge or reduce the image size.
- Control image contrast and brightness.
- Time saving editing features: change contrast, brightness, and patterns on all or part of the image AFTER the original has been scanned.

The software, written by Mac team developer Andy Hertzfeld, combined with ThunderScan provides you with an extremely versatile and useful tool. If you want or need graphics but find yourself somewhat lacking in artistic ability, or if you simply don't have time to produce the graphics you would like, then ThunderScan is what you've been looking for. Graphics on the Mac will never be the same again!

.....

PRODUCT: THUNDERSCAN
PRODUCT CODE: HTHUN
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A BETTER SOLUTION THAN REINVENTING THE WHEEL:

CALL-A.P.P.L.E.

FASTFIND

by Jim Hammond

This comprehensive index of Call-A.P.P.L.E. magazine will quickly tell you where to find the crucial information you need to:

- Make the best purchasing decisions for software or hardware.
- Solve software/hardware problems with ease and at minimum cost.
- Avoid re-inventing existing programs and solutions.

Imagine having at your fingertips the wealth of information contained in SEVEN YEARS worth of Call-A.P.P.L.E. magazine, as well as special publications such as PEEKING AT Call-A.P.P.L.E. As your library of Call-A.P.P.L.E. grows, semi-annual updates will be made available at minimal cost so that you will always be able to find the information you need quickly and easily.

A CASE STUDY

That obnoxious flashing cursor is driving you up the wall and you have simply got to get rid of it. Can it be done? How?

Here is a sample for that information using Call-A.P.P.L.E. FASTFIND.

```
FIND: NON?FLASHING          (? = WILDCARD CHARACTER)
LOADING A84                 (A84 = CALL-A.P.P.L.E. 84)
LOADING A84.A83
LOADING A82.A81
NFC . NON-FLASHING CURSOR FIX (A1180P23) * A581P49
LOADING A80.PA80      (PA = PEEKING AT CALL-A.P.P.L.E.)
// NON-FLASHING CURSOR. MODIFY DOS & PLE FOR
   NFC (FIX A581P49 * A1180P23 LOADING PA79.PA78)

      ** DONE **
```

This search generated two cross-referenced finds, one of which is a fix to the original printing of the program. This report tells you that the article can be found in (A) Call-A.P.P.L.E., (11) NOVEMBER, (80) 1980, (P23) PAGE 23. The fix can be found in Call-A.P.P.L.E. MAY 1981 PAGE 49.

(TOTAL ELAPSED TIME TO SEARCH ENTIRE INDEX = 33.4 SECS!)

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5 "	6.50	9.25
6 "	7.50	10.43
7 "	8.50	11.61
8 "	9.50	12.79
9 "	10.50	13.97
10 "	11.50	15.15
11 "	12.50	16.33
12 "	13.50	17.51
13 "	14.50	18.69
14 "	15.50	19.87
15 "	16.50	21.05
16 "	17.50	22.23
17 "	18.50	23.41
18 "	19.50	24.59
19 "	20.00	25.77
20 "	21.00	26.95
21 "	22.00	28.13
22 "	23.00	29.31
23 "	24.00	30.49
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Don Elman

Patronage Dividends

When A.P.P.L.E. officially became a co-op last fall, we explained that dividends would be available after the end of every profitable fiscal year, distributed as a percentage of each active member's product purchases during that period. Since our fiscal year ends on March 31, we are currently in the process of calculating if and how large the dividend will be. Our hope is to declare a "patronage dividend credit" to each active (as of April 1, 1985) member, based on the total of his or her A.P.P.L.E. product purchases between September 20, 1984—when co-op status became official—and March 31, 1985. We will announce the dividend percentage in a future issue of *Call -A.P.P.L.E.*, and will send each eligible member a notice of the individual credit amount, along with instructions on how to redeem it.

Open for Business

In the interest of serving your needs better, we have established a new holiday schedule that maximizes the number of days in which our staff is available to answer questions and service orders. As of 1985, our offices will be closed for only six major holidays during the year: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. Otherwise our phone lines will be open Monday through Friday, 9 AM to 4PM, Pacific Time.

Reader's Choice

Congratulations to A.F. Caughey, Jr. of Livonia, Michigan, whose card was drawn at our March meeting, winning him a $100 credit toward any A.P.P.L.E. product purchase!

A.P.P.L.E. Co-op
Annual Membership Meeting
March 19, 1985

Summary of Minutes
(Complete minutes available on request)

Major Changes

A.P.P.L.E. obtained co-operative status as of September 20, 1984. As part of the member approval of the new articles of incorporation and bylaws, the term of each officer and director was extended one year.

In January 1985, the Co-op moved into new headquarters about three miles northeast of the Kent facility. The rent and related lease expenses in the new building will be about one-half as much as before, thereby saving us about $100,000 per year.

Financial Status

For fiscal year 1984 (ending March 31, 1985), net income through February 28, 1985 before depreciation was $11,000. Although depreciation expense exceeded net income by $87,000, this difference should be offset by a pending IRS refund of $55,000 and by savings realized through our move to less expensive headquarters. Sales of hardware, software, and magazine advertising remain about the same as last year, as is the number of active members. (We recently issued membership card # 30,000.) To contain magazine production costs, the number of pages in *Call-A.P.P.L.E.* has been reduced since August 1984, and will be determined each month on the basis of advertising sales.

We have initiated application to the National Consumer Cooperative Bank for up to $350,000 in credit. It appears that the likelihood of obtaining such funding would be increased by establishing an equity fund from various sources, particularly members. Following a general discussion of different means for attracting contributions to this fund, a straw poll indicated general support for either a special software premium, or a "coupon" system for purchasing advance credit toward A.P.P.L.E. Co-op products.

Respectfully submitted,
David E. DeGroot, Secretary

A.P.P.L.E. CONSULTANTS

Call -A.P.P.L.E. consultants are unpaid volunteers and perform a valuable service. Before placing a call, please make sure you know the time zone you are calling to. No calls after 9pm please. Sometimes a consultant will have you leave your name and number and they will return your calls. In all fairness, please expect the return call to be collect. We are always looking for more consultants. If you see an area that needs coverage, please drop us a note c/o *Butch Greathouse* with your qualifications and availability.

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Apple III (East)	Harry T. Hanson	(201) 467-0712
Apple III (East)	Stuart Yusem	(609) 822-9306
Apple III (Midwest)	Tim Smith	(309) 734-7451
Apple III (West)	Bob Huelsdonk	(206) 542-7122
Apple IIe (EAST)	John Hall	(617) 241-9050
AppleWriter	Don Lancaster	(602) 428-4073
AppleSoft	Leon Raesly	(301) 460-0754
Assembly Language	Don Lancaster	(602) 428-4073
Assembly Language	Scott Zimmerman	(801) 378-4100
Assembly/CP/M (East)	Dennis Baumgarte	(914) 856-3617
CP/M (Midwest)	Murray Arnow	(312) 878-0113
CP/M (West)	Kevin Talbot	(206) 232-7058
Data Bases	Steven E. Bair	(512) 699-0776
Data Bases/Business	Jerry Rogan	(319) 332-4166
DBASE/PFS	Leon Raesly	(301) 460-0754
DOS (East)	William P. Steinberg	(212) 921-0663
DOS (South)	Lee Meador	(817) 469-6019
DOS (West)	William Reynolds	(503) 472-4028
DOS/AppleSOFT (Europe)	Cornelis Bongers	31-010-525511 Ext.3275
Education	Ted Perry	(916) 485-1690
FORTRAN	Alan Robinson	(503) 757-8234
Geoscience	Tedd Sperling	(517) 393-1296
Handicapped Applications	Tom Deal M.D	(206) 634-2847
Hardware design,I/O control	Stan Axelrod	(415) 563-1840
Hardware Interfacing	Randy Halvorson	(206) 783-9040
Hi-Res	Ed So	(408) 267-3448
LISP	Frederick Naef	(703) 471-1479
Logo	Jeff Sandys	(206) 784-3317
Macintosh	Dan Stinson	(206) 242-2590
Mathematics	Stowe Keller	(804) 971-6876
Medical Group	Fred Merchant M.D.	(206) 328-5299
Music	Stephen F. Lee	(704) 876-3444
Pascal (East)	Tom Woteki	(202) 547-0984
Pascal (Midwest)	Tim Smith	(309) 734-7451
Pascal (West)	Dennis R. Cohen	(213) 956-8559
Pascal (West)	Paul E. Sleeper	(415) 494-1915
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Stock Market	Robert Wood	(703) 893-9591
Video Interfacing	Jim Hockenhull	(509) 334-4137
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Visicalc (North)	Vince Aderante	(312) 289-9685
Visicalc (South Africa)	Brian Abrahams	(Durban) 315442
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Word Processing	Leon Raesly	(301) 460-0754

A Different Way to Type

Greg DeWilde

Just who is this guy Dvorak and what's he doing in my Apple?

As the modern-day typewriter evolved during the middle 1800's, everyone had their own idea of how the keys should be arranged. By the turn of the century, we had typewriters with keys arranged in circles and semi-circles, piano-style straight lines, and four, six, or eight rows. The letters were also arranged in many different ways. The top row of keys (on those typewriters which had a top row) varied from CJPFUBL to KBFGNIA to ZKPWMCR and others. There were even typewriters with a separate key for each upper and lower case character (the SHIFT key was considered "impractical"). From all this emerged the arrangement we are most familiar with today - the Sholes, or QWERTY, keyboard.

The seemingly random arrangement of the QWERTY keyboard purposely slowed down touch typists, preventing the mechanical action of early typewriters from becoming jammed. Today's electronic keyboards, with their N-key rollover, do not suffer this same jamming; yet the QWERTY key arrangement remains.

As typewriters improved, many alternate, or reform, keyboard arrangements were proposed to lift this speed limitation. In 1943, Dr. August Dvorak developed the Dvorak Simplified Keyboard (DSK, see Figure 1). The DSK places the five vowels on the left side and the five most commonly typed consonants on the right side of the home, or center, row. The resulting row of keys places the most often used letters under the strongest fingers.

Although the DSK was clearly more efficient, the QWERTY keyboard had become so popular by this time that Dvorak's keyboard gained little following. Lately, however, there has been a resurgence of interest in Dvorak's alternative for use with electronic keyboards. Many desktop computer and terminal manufacturers, including Apple, now offer the DSK arrangement in addition to the standard QWERTY keyboard.

The Apple *//c* is the first of Apple's computers to offer the DSK as a standard feature. Simply by pressing the slim switch labelled 'keyboard', you can select either the QWERTY arrangement as shown on the *//c*'s keycaps or the DSK arrangement of Figure 2b. (By the way, the DSK arrangment shown in the Apple *//c* manual is incorrect. The correct arrangement is shown in Figure 2b.) The keycaps can be gently pried off and relocated to the Dvorak positions if you like. It is rumored that Apple will soon be offering a set of Dvorak keycaps that will fit over the existing keys and can be snapped on and off each time you change the position of the select switch.

The Apple *//e* also contains the internal circuitry to select the DSK arrangement. However, Apple did not provide a convenient means of accomplishing this. With a few minor modifications to the main circuit board (described below), you can duplicate the Apple *//c*'s keyboard select switch. In fact, you can go it one better and make the keyboard selection via software. (Unfortunately, you cannot move the keycaps on the Apple *//e* key-

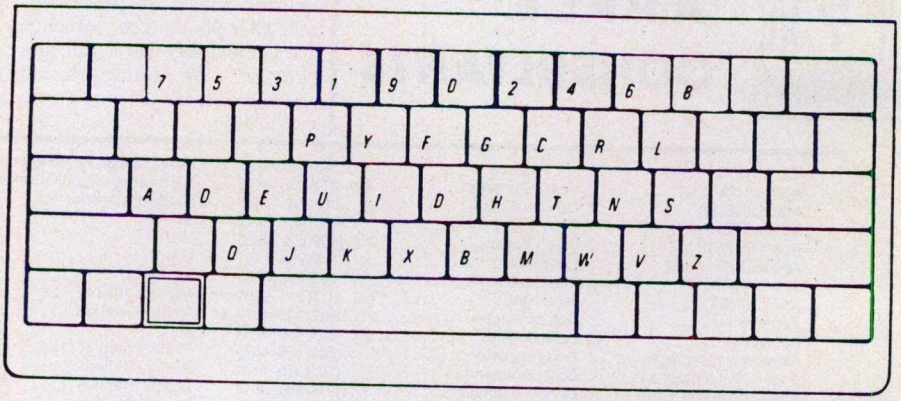

Figure 1. Dr. August Dvorak developed the Dvorak Simplified Keyboard as an alternative to the popular QWERTY arrangement developed by C. H. Sholes. Placing the vowels and the most often used consonants on the home (center) row increases the typing speed of most touch typists.

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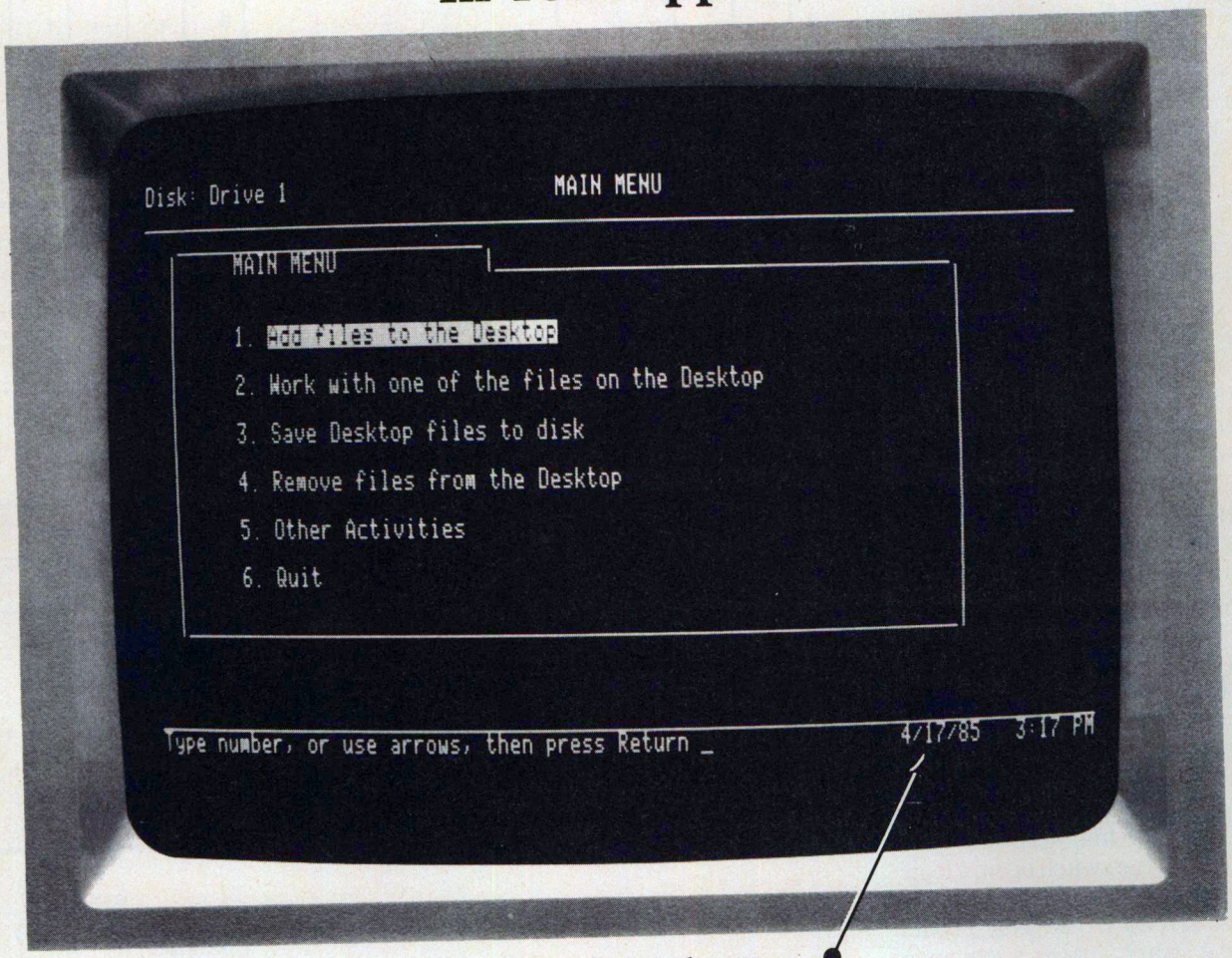
Disk: Drive 1
MAIN MENU
MAIN MENU
1. Add files to the Desktop
2. Work with one of the files on the Desktop
3. Save Desktop files to disk
4. Remove files from the Desktop
5. Other Activities
6. Quit
Type number, or use arrows, then press Return _
4/17/85 3:17 PM

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board. The keycaps are sculptured to fit only in the QWERTY arrangement. Again, Apple is rumored to be offering a set of Dvorak keycaps for those who would like them).

Apple //e DSK Hardware Modifications

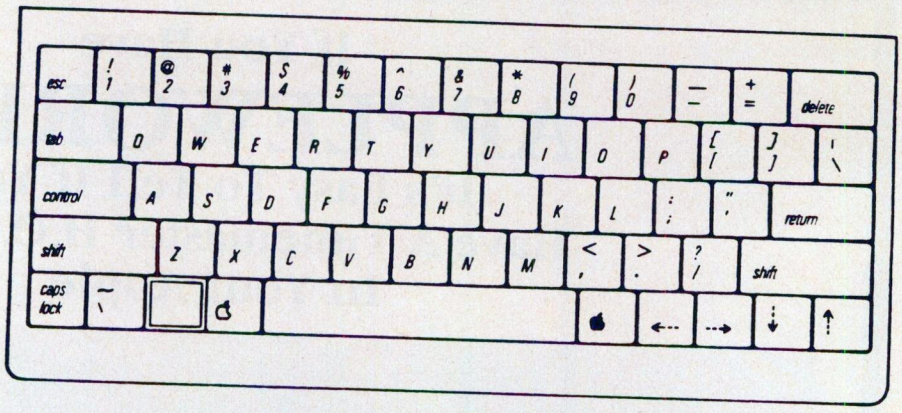
The keyboard encoding circuit in the Apple //e consists of a standard encoding integrated circuit (IC) and a ROM. The ROM maps the 56 character-producing key positions on the keyboard to one of the 128 ASCII character codes, depending on the key pressed and whether the CTRL and/or SHIFT keys are being held down.

For the standard QWERTY keyboard arrangement, only half of the ROM is used. The other half of the ROM contains the ASCII code map for the ANSI version of the DSK (see figure 2b). To access this map, we simply change the ROM's A10 address line from a logic zero to a logic one. Unfortunately, this line also connects to the enable pin on the video character generator. Step one, then, is to remove this IC (at motherboard location F4), very carefully bend pin 18 until it points straight out instead of down, and then reinsert the IC into its socket, (see Figure 3).

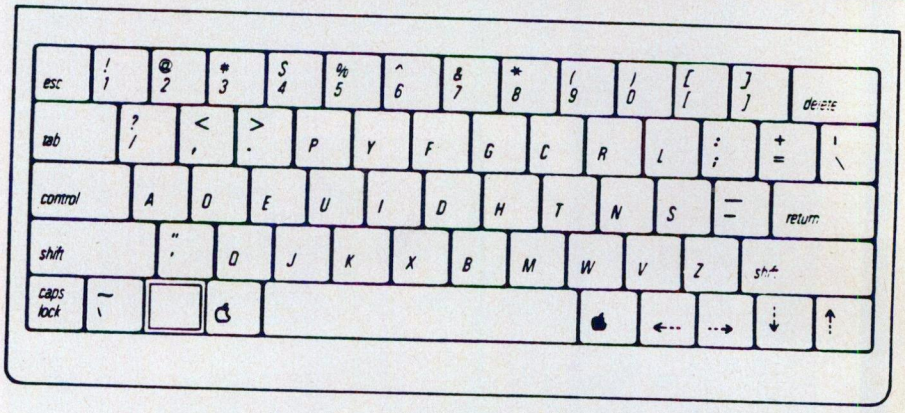
Now that we have isolated the keyboard circuit from the video circuit, we can proceed to apply a logic one to the A10 line of the keyboard ROM and access the Dvorak code stored there. To duplicate the Apple //c's keyboard select switch, connect a SPST switch to connector J19 (motherboard location B14). With the switch open, a logic zero is on the A10 line and the ROM selects the QWERTY keyboard code. Closing the switch applies a logic one to A10, selecting the Dvorak code.

To place the keyboard selection under software control, modify the video character generator IC (F4) as above, then solder a jumper wire across pad X3 (motherboard location B14). The keyboard select line is now connected to the AN2 output of the game paddle port. When the computer is first turned on, or after a RESET, this output is a logic one, selecting the DSK arrangement. A POKE 49244,0 changes the AN2 output to a logic zero, selecting the QWERTY keyboard. A POKE 49245,0 selects the DSK again.

Depending on which method you choose to implement the DSK option, you may or may not be able to tell which arrangement is currently



2a. //c and //e QWERTY keyboard



2b. //c and //e Dvorak keyboard

Figure 2. The QWERTY (a) and Dvorak Simplified Keyboard (b) are switch selectable on the Apple //c. The text decsribes how to add the DSK to the Apple //e.

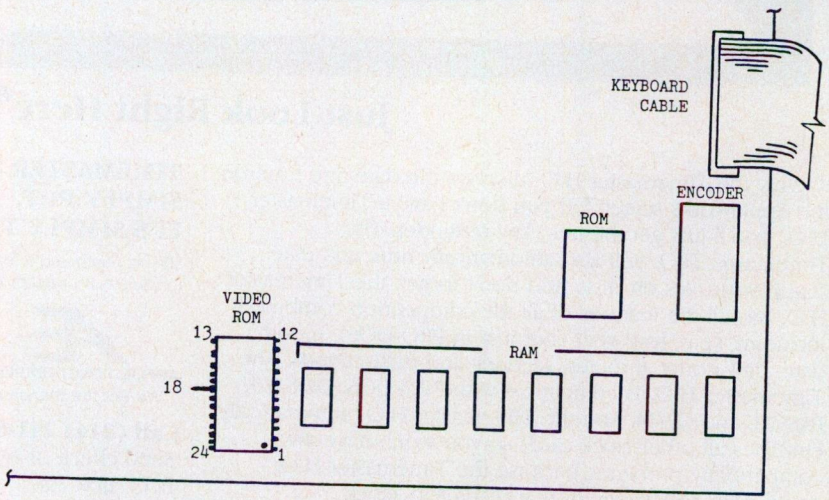


Figure 3. To disconnect the Video ROM chip enable line from the Keyboard ROM A10 address line, very carefully pry loose the Video ROM (located near the center of the front edge of the Apple //e motherboard) with a small screwdriver. Work slowly, being careful not to bend or break any pins. Next, using small needle-nose pliers, bend pin 18 of the Video ROM until it points straight out. Then gently reinsert the ROM into its socket, pressing firmly until all of the pins are fully seated.

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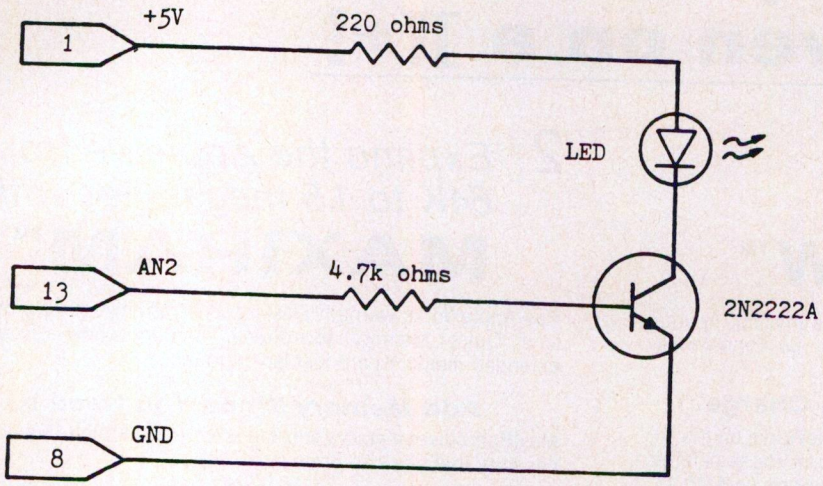

Figure 4. Connecting the AN2 output to the Keyboard ROM A10 address line places the keyboard selection under software control (see text). By connecting a LED to the game paddle port, you can tell whether the QWERTY (LED off) or DSK (LED on) keyboard is selected. The pin numbers shown are for the 16-pin socket on the Apple motherboard.

selected. If you connected a switch to connector J19, you can label which position is QWERTY and which is DSK. However, if you chose to use the AN2 output as the keyboard select, you cannot detect which keyboard arrangement is selected. You might connect a LED to the AN2 output at the game paddle port as shown in Figure 4. If the LED is lit, the Dvorak keyboard is selected.

Which Is Better?

Because of our familiarity with QWERTY, the DSK seems a bit awkward at first. However, for word processing and other text-entry tasks, the Dvorak key arrangement is both easier and more efficient. Deciding which keyboard arrangement is best is a matter of personal preference. But at least now you have a choice. A little practice with the Dvorak Simplified Keyboard just might convince you that there are better ways to type than with QWERTY.

[Ed. note—More technical information about accessing the IIe's Dvorak keyboard can be found in Understanding the Apple *IIe, by Jim Sather, Brady Communications, 1985.]*

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All times in seconds. (Time Test programs available)		DAVID DOS-II	ProDOS	DOS 3.3
TEXTFILES (100 Sectors)	TSAVE	8.0	NO	NO
	TLOAD	6.2	NO	NO
(791 Strings, 32 chars ea)	WRITE	29.3	28.0	88.4
	READ	24.3	16.3	83.8
	PRINT/READ	44.2	45.9	117.1
(442 Sectors, 7 x 500)	APPEND	142.3	142.9	1231.2
APPLESOFT (100 Sectors)	*SAVE	6.4	16.4	33.1
	LOAD	5.0	4.0	23.5
INTEGER (100 Sectors)	*SAVE	6.6	NO	33.4
	LOAD	4.9	NO	23.4
BINARY (100 Sectors)	*BSAVE	7.3	18.4	28.7
	BLOAD	5.8	4.8	24.5
48K PROGRAM SPACE (With 3 Bufs avail)	APPLESOFT	36,352	NO	36,352
	INTEGER	36,352	NO	36,352
	BINARY	36,352	34,816	36,352
64K PROGRAM SPACE (With 4 Bufs avail)	APPLESOFT	46,592	32,256	35,756
	INTEGER	46,592	NO	35,756
	BINARY	46,592	41,728	35,756

*Add 5 seconds for Verify. Apple II, Applesoft & ProDOS are trademarks of Apple

Ten New DOS Commands

1. HIDOS moves DOS above 48K memory.
2. FRE makes ultra-fast garbage collection.
3. DATE stamp files. Clock or manual dating.
4. TLOAD speed loads all Text Files to mem.
5. TSAVE speed saves Text Files from memory.
6. TLIST lists all Text Files to screen/printer.
7. DUMP Binary/Ascii to screen or printer.
8. DISA disassembles Binary to screen/printer.
9. AL prints program Address & Length.
10. / is a one keystroke Catalog.

Identical Operation

All new commands operate identical to old DOS commands on the keyboard & in programs.

Install In Three Seconds

Install DAVID-DOS II on your full disks in three seconds without touching the programs. Create bootable high-speed new disks with a Basic, Binary, or Exec Hello & 35/40 tracks. Create Data-Disks with 30 extra sectors.

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Key operated variable speed scrolling for TLIST, DUMP and DISA. Lower-case accepted on all commands. Catalog shows Free-Space. Automatic support of Integer or Applesoft Card in any slot, while in HIDOS or LODOS. Vendor license includes protection system.

Compatible

All DOS entry addresses have been preserved. DOS is same length and compatible with most software. David-Dos is fully copyable. Init areas were used for David-Dos. Works with all Apple IIs including IIe, IIc, Franklin & Basis with 48K/64K/128K & Corvus & Xebec Hard Disks. Complete documentation and many utilities are on the disk.

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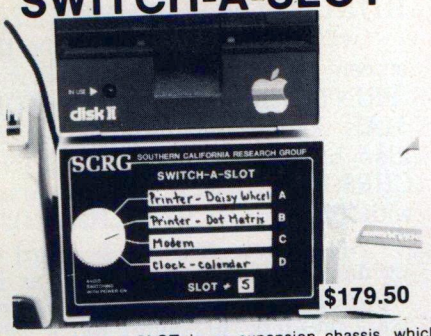
Circle 24 on Reader Service Card

SCRG PRODUCTS FOR THE APPLE COMPUTER

SWITCH-A-SLOT



$179.50

The **SWITCH-A-SLOT** is an expansion chassis, which allows the user to plug in up to four peripheral cards at one time. One of these cards is selected for use, and only that card draws power.

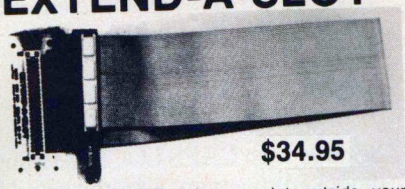
This product is especially useful where the software requires the printer to be in a particular slot, and the user wishes to choose between two or more printers.

- Allows up to four peripheral cards to be plugged into one peripheral slot.
- User selects desired card by front panel rotary switch.
- Only selected card draws power.
- Plugs into any peripheral slot.
- Saves wear and tear on delicate connectors.
- 18" cable connects Switch-a-slot to computer.

New—resistive terminations for better response

SWITCH-A-SLOT and EXTEND-A-SLOT work well with all slow to medium speed cards, such as Modems, Printers, Clock, 80 Column, Music, etc. They are not recommended for high speed data transfer devices such as disk drive controllers, alternate processor, and memory cards. These products may be incompatible with some alternate processor cards.

EXTEND-A-SLOT



$34.95

The **EXTEND-A-SLOT** brings a slot outside your APPLE™, allowing an easy change of cards. The 18" flex cable is long enough to allow placement of the card in a convenient location. The high quality connectors are gold plated for reliability.

The perfect accessory for:

Owners of large numbers of I/O expansion cards—keep your frequently used cards installed. Use the EXTEND-A-SLOT for the others.

Technicians—easy access to test points on accessory cards under actual operating conditions.

Experimenters—make easy changes to cards while card is installed.

EASY TO USE—just plug it in as you would any expansion card, then plug your card in. When you want to change cards, do it easily outside the computer, without the wear and tear on the computer expansion slot.

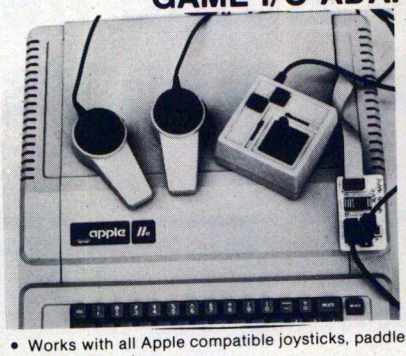
OTHER PRODUCTS

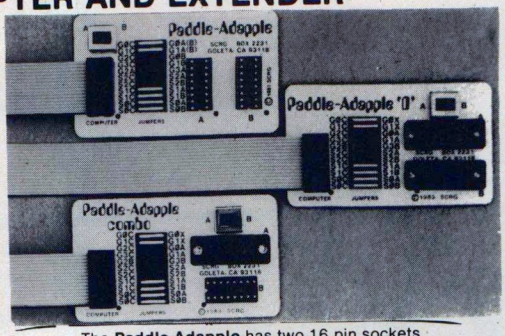
D Manual controller. Gives complete control over the $C000 through $C0FF range in hardware. Can be switched while program is running. $89.50.

MAGIC KEYBOARD (for][or][+ only). Re-encodes the keyboard to give alternate keyboards, such as DVORAK, ASK, 10-KEY, HEXIDECIMAL KEYPAD, etc. $49.50.

Paddle-Adapple

GAME I/O ADAPTER AND EXTENDER





- Works with all Apple compatible joysticks, paddles and other I/O devices.
- Select one of two devices or . . .
- Use 4 paddles simultaneously.
- Unique "Jumpers" socket allows you to configure to meet your needs.
- BPI™ users can have BPI™ device and paddles plugged in simultaneously. (**Paddle-Adapple** and **Paddle-Adapple Combo** only).
- Gives you four push-button inputs.
- Supports shift key modification.
- Exchange X & Y joystick axis.
- Small and compact — adheres to computer with supplied foam tape.
- All Strobes, annunciators and power available on all 16 pin connectors.
- Supplied with 18" cable.

$29.95

The **Paddle-Adapple** has two 16 pin sockets

The **Paddle-Adapple "D"** works with the subminiature D connectors.

The **Paddle-Adapple Combo** has one 16 pin socket and one subminiature D connector.

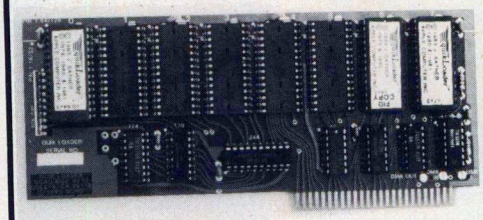
NEW 9-16 Adapter

For Apple / /e and / /c

This product permits the use of most 16-pin I/O devices with the APPLE //c or //e. By plugging this adapter into the sub-miniature 'D' connector, you can plug in a 16-pin device, such as the Paddle-Adapple, paddles, joystick, KOALA PAD™, etc. The only limitations are those devices that use the annunciators or the C040 strobe, such as the POWER PAD™. Please note that the //c does not support four joystick inputs.

$14.95

quikLoader™



FAST AND CONVENIENT

The quikLoader is the *fastest* way to load programs. **BAR NONE!** Programs can be loaded in fractions of a second. More importantly, DOS is instantly loaded every time the computer is turned on. Integer is even loaded in the language card. This process takes less than a second, saving valuable time. Frequently used programs are available *instantly* when you need them, without having to look for the disk, or hoping that the lengthy disk loading procedure goes smoothly.

To run a program from the quikLoader, bring up the quikLoader catalog (Q-reset), and the names of the programs will be displayed, along with an index letter. Pressing the index letter will instantly load and run the program.

Up to 23 programs on the quikLoader can be displayed on the screen at one time. If you have more programs, you may scroll through the catalog in either direction.

The quikLoader is **ideal** for applications requiring a dedicated computer. Your program can be automatically loaded and run at "power-up".

PROGRAMMING EPROMS

Putting your own programs on the quikLoader is easily done, using a separate EPROM programmer such as the **PROmGRAMER.** For APPLESOFT, INTEGER, or single machine language files, no programming knowledge is necessary. You **will** need experience if you want to save copy-protected or complex programs. The amount of experience necessary depends on the complexity of the program.

COMMERCIAL PROGRAMS

If you have a program that is valuable, it will become **more** valuable when it is instantly available to you. We are actively seeking licenses from software publishers to allow their popular programs to be made available for the quikLoader. Independent authors are encouraged to write programs suitable for the quikLoader. If the author wishes, we will market the program (with appropiate royalties), or the author can take care of all marketing. In either case, we will make known to our customers the availability of these programs.

We start your library of programs with the most popular utilities on the card, FID and COPYA. Now, if you have to copy a disk, you don't have to search for the master disk. You can start copying within 3 seconds after turning on the computer.

We are currently licensed to sell several very popular programs on EPROM. **DOUBLE—TAKE** by BEAGLE BROS., and **COPY][PLUS** by CENTRAL POINT SOFTWARE. The introductory price for DOUBLE—TAKE is $45.00. This includes the program exactly the same as you would buy it at your dealer for $34.95 (including disk and documentation), and a programmed 27128 EPROM (worth about $25.00). COPY][PLUS cost $65.00. This includes the original program (worth $39.95) and **two** programmed 27128's.

Other programs available directly from us or the publishers are, **BARKOVITCH I/O TRACER AND SINGLE STEP TRACE, MICRO/TYPOGRAPHER** from **TIDBIT SOFTWARE, ECHO** speech synthesizer software from **STREET ELECTRONICS,** and **MERLIN** assembler, from **ROGER WAGNER PUBLISHING.** More commercial programs are now in the works.

MEMORY CAPACITY

The quikLoader has eight sockets for EPROMs. These sockets can accommodate standard EPROMs from 2716 to 27512. These types can be freely intermixed. The memory capacity of the quikLoader depends on the EPROMS used. For example, the 2716 can hold 2K of programs, and the 27512 can hold 64K. (Frankly, the current costs of the 27512 is prohibitive,but should come down drastically in the next year.) At this writing, the least cost-per-bit is provided by the 2764, which can hold an 8K program. Using these "chips", the quikLoader becomes a 64K ROM. Using larger capacity EPROMs allows it to become a 128K, 256K, or even a 512K card. If more memory capacity is needed, the quikLoader operating system supports multiple quikLoaders.

INCREASED DISK CAPACITY

Since DOS is loaded from the quikLoader every time the computer is turned on, it is not necessary to take up valuable disk space with DOS. This will give you more than 5% additional space for programs and data on your disks.

ABOUT THE DESIGNER

The quikLoader was designed by Jim Sather, author of UNDERSTANDING THE APPLE][(forward by Steve Wozniak), published by QUALITY SOFTWARE (21601 Marilla Street, Chatsworth, CA 91311 (818) 709-1721).

SYSTEM REQUIREMENTS

The quikLoader plugs into any slot of the APPLE][+ or //e. If used in a][+, a slightly modified 16K memory card is required in slot 0. A disk drive is required to save data.

DOS, INTEGER BASIC, FID, and COPYA are copyrighted programs of APPLE COMPUTER, INC. licensed to Southern California Research Group to distribute for use only in combination with quikLoader.

$179.50

PROmGRAMER™

The **PROmGRAMER** will read or program any of the standard single-volt EPROMS from the 2708 to the 27512. Features include:

- Slot independent operation for the APPLE // family of computers.
- Zero insertion force sockets accepts 24 or 28 pin devices.
- Disk based software allows easy customization of software.
- Complete instructions for loading software into quikLoader.

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Circle 25 on Reader Service Card

The Apple //e Enhancements

Ken Kashmarek

AS PART of Apple II Forever, Apple Computer is providing the Apple //e Enhancement Kit for your //e. The kit provides four new chips with the Mouse Text characters and many of the features of the //c, including the 65C02 processor. All new production //e computers come equipped with the enhanced chips (65C02, character generator ROM, CD ROM and EF ROM).

Changes to the //e are in the following areas when the enhanced chip set is installed.

Machine Identification

//e Enhanced: $FBB3 = $06, $FBC0 = $E0 (was $EA)

At power up, 'Apple //e' is displayed in place of the old familiar 'Apple]['] (or use CALL -1184).

65C02 Processor

This chip replaces the old 6502 chip. It has 27 new instructions. Several instructions are faster and the JMP (indirect) problem has been fixed. The BIT immediate instruction behaves differently than BIT zero-page and BIT absolute (N and V are not set, Z still is). The faster instructions may affect programs with timing dependencies. These usually include copy protected programs.

Video Firmware

ASCII control characters passed to the screen may now be suppressed or allowed under program control. Escape Control-D suppresses control characters except Bell ($07), Backspace ($08), Line Feed ($0A), and Return ($0D). Escape Control-E allows all ASCII characters to be passed to the screen.

The automatic uppercase feature was removed (formerly Control-R, referred to as uppercase restrict).

Pascal and Applesoft 80 column mode scrolling is now 30% faster than before (no more jagged scrolling).

The monitor SETVID operation now switches the //e out of 80 column mode.

Mouse Text

This area requires the most explanation. First of all, the //e has two character sets: primary and alternate. The primary character set is used in the standard 40 column mode. In 80 column mode (established by issuing PR#3), the alternate character set is used. The 80 column card must be active to use the Mouse Text characters. They will not display in the standard 40 column mode.

Mouse Text *does not* replace flashing characters in the alternate character set (as indicated by some sources). The alternate character set *never* had flashing characters (see page 32, table 5-1 of the *80 Column Text Card manual*—A2L2006; or page 20, table 2-6 of the *Apple //e Reference Manual*). The alternate character set is the default when the 80 column firmware is turned on (via PR#3).

Flashing characters are only available on the primary character set in standard 40 column mode. Therefore, any program that uses flashing characters and numbers will still get flashing characters and numbers (they must run in standard 40 column mode with 80 column firmware turned off; this is normal and may be set with PR#0 or Escape Control-Q from 80 column mode). Programs that use 80 column mode could not get flashing characters.

The Mouse Text characters encompass a range of byte values from $40 to $5F. These are normally the upper case letters. To be displayed as Mouse Text, they must be preceded by INVERSE and Escape. To be turned off, they must be followed by Control-X and NORMAL.

Mouse Text must be activated *before* the Mouse characters will be displayed! Therefore, any program using INVERSE will still get inverse characters. Mouse Text is an extension to INVERSE. To activate Mouse Text, use INVERSE and follow it with 'PRINT CHR$(27);'. Now, characters in the range $40-$5F "@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_" will display as Mouse Text on the screen. Mouse Text is turned off with 'PRINT CHR$(24)' followed by NORMAL. Alternatively, Mouse Text can also be turned on with 'PRINT CHR$(15); CHR$(27);' and turned off with 'PRINT CHR$(24); CHR$(14);'.

Applications that use standard 40 column display will still run as is. Applications using 80 column firmware (in 40 or 80 column mode, with the primary or alternate character set) should run as is, even when using INVERSE. The only change is for applications using INVERSE and sending Escape ($1B) to the screen. Those programs, of which CONVERT is one, will see a change. AppleWorks is one which sees a change. The former inverse A is now displayed as Open Apple (also for Logo II).

All of the information about characters sets is documented in the standard //e manual. It has little to do with Mouse Text. That is why Mouse Text must be actived with a sequence of commands that has not been documented until now.

Applesoft 80 Column Support

HTAB, TAB, SPC, and command tabbing in PRINT statements now function correctly in 80 column mode. This feature alone is sufficient reason to obtain the enhanced chip set.

Applesoft Lower Case

Applesoft programming may now be done with CAPS LOCK in the up (or unlocked) position. Variables and keywords are converted to uppercase while literal strings, DATA, and REM contents, are left in lower case if entered that way.

Apple II Pascal

The new ROM allows DOS 3.3 to be booted from a Disk II device in any slot. It also allows ProDOS to be started from other than Disk II devices (a ProFile) from any slot. If the boot device (power up booting) is not a Disk II, then ProDOS must be the operating system. Pascal must still be started from slot 6 using a Disk II device.

Pascal 1.2 programs may turn the cursor off and on for faster screen handling. Use Control-F to turn off the cursor and Control-E to turn it back on.

Pascal firmware protocol no longer supports 40 to 80 column mode switching.

Monitor Enhancements

The monitor now supports lower case input, ASCII character input, a search command, and the mini-assembler (without the 65C02 opcodes). To use character input, each ASCII character must be preceded by the single quote and followed by a blank.

Slot 3

Slot 3 cards may now have active ROM and be present with the 80 Column Text Card. Slot 3 no longer has to stay empty. There are restrictions that must be observed if the ROM is to be active (including the handling of interrupts and Pascal protocol if the card is a character handling device).

This provides for future expansion using slot 3 if the expansion card must have active ROM.

Interrupts

The new chip set supports interrupts while the 80 column firmware is active. Location $45 is now saved on the stack during interrupt processing. This significantly improves processing for programs that use interrupts, especially Mouse programs.

A User's Guide comes with the kit and there is an optional Programmer's Guide (be sure to ask your dealer for it). The documentation does not make it entirely clear that Control-O Escape must be printed to the screen to activate the Mouse Text characters, or that Control-X Control-N printed to the screen to turn off Mouse Text. The 80 column firmware mode byte is at location 1275. If bit 0 is on (1), then Mouse Text is off.

Page 4 in the User's Guide provides a sample program. This program has a strange property. It has the following sequence of commands:

```
PRINT
PRINT D$;'PR#3'
INVERSE
PRINT CHR$(27);
```

The result is an inverse screen with the Mouse Text printed at the top. The Programmer's Guide has a sample program with the following command sequence:

```
PRINT D$;'PR#3'
PRINT
INVERSE
PRINT CHR$(27);
```

In this case, the screen is cleared to blanks because inverse is set after the first output character activates the 80 column firmware (remember, PR#3 only changes the I/O hook for output; it does not call the routine until the first character is sent).

Mouse Text characters cannot be displayed in inverse.

The sample program, MOUSE TEXT DISPLAY, sets up the cast of Mouse Text characters, and uses them to display a menu screen top bar, side bar, display window, and menu folder. Note that all character positions within the menu folder are available for display purposes. The border still occupies a row of characters around the entire menu folder.

Each Mouse Text character in the program occupies five or six character positions in a string. The actual character is preceded by the mouse on sequence and followed by the mouse off sequence. In this fashion, Mouse Text can be displayed using the same print commands as the data to be displayed.

The program displays the output, followed by a switch to 40 columns and then back to 80 columns.

The Running Man and File Folder each occupy two character positions on the screen. The pointer is used in conjuction with the Apple Mouse. The Timepiece is an indicator to the user that work is in progress.

Overall, the enhancement is a significant improvement for the Apple *//e* computer. Software that was formerly *//c* only may now run on an enhanced *//e*. With the enhancement, you have greater configuration capability for ProDOS and Pascal 1.2 with regard to the ProFile and floppy disk drives. The interrupt handling capabilities in the firmware significantly improves the screen handling and will improve processing for Apple Mouse programs. It is very likely that this enhancement will be required for future software packages.

See your Apple Dealer to get your *//e* enhanced!

```
100  REM
Mouse Text Display
110  GOSUB 480: PRINT  CHR$ (4);"
     PR#3"
120  TEXT : HOME : HTAB 5
130  REM Mouse Text
140  PRINT CA$;OA$;PT$;TP$;CH$;IC
     $;RM$;
150  PRINT LA$;UL$;DA$;UA$;OS$;CR
     $;BL$;LC$;
160  PRINT RC$;DC$;UC$;HL$;LL$;RA
     $;LB$;UB$;
170  PRINT FF$;RS$;DI$;DB$;HA$;PA
     $;LS$: PRINT
180  REM Top Bar
190  PRINT RS$;LC$;: FOR I = 1 TO
     18: PRINT LB$;UB$;: NEXT
200  PRINT RC$;LS$: PRINT RS$;UC$
     ;LS$
210  REM Side Bar
220  FOR I = 1 TO 3: PRINT RS$;LB
     $;LS$: NEXT
230  PRINT RS$;DC$;LS$: PRINT " "
     ;OS$;" "
240  REM Window With Mouse Text
250 VT =  PEEK (37) - 4
260  VTAB VT: HTAB 4: PRINT RS$;P
     A$;: FOR I = 1 TO 7: PRINT D
     B$;: NEXT : INVERSE : PRINT
     "Mouse Characters";: FOR I =
     1 TO 7: PRINT DB$;: NEXT : PRINT
     LS$
270  HTAB 4: PRINT RS$; SPC( 31);
     LS$
280  HTAB 4: PRINT RS$; SPC( 1);C
     A$; SPC( 3);OA$; SPC( 3);PT$
     ; SPC( 3);TP$; SPC( 3);CH$; SPC(
     3);IC$; SPC( 3);RM$; SPC( 4)
     ;LS$
290  HTAB 4: PRINT RS$; SPC( 31);
     LS$
300  HTAB 4: PRINT RS$; SPC( 1);L
     A$; SPC( 3);UL$; SPC( 3);DA$
     ; SPC( 3);UA$; SPC( 3);OS$; SPC(
     3);CR$; SPC( 3);BL$; SPC( 3)
     ;LC$; SPC( 1);LS$
310  HTAB 4: PRINT RS$; SPC( 31);
     LS$
320  HTAB 4: PRINT RS$; SPC( 1);R
     C$; SPC( 3);DC$; SPC( 3);UC$
     ; SPC( 3);HL$; SPC( 3);LL$; SPC(
     3);RA$; SPC( 3);LB$; SPC( 3)
     ;UB$; SPC( 1);LS$
330  HTAB 4: PRINT RS$; SPC( 31);
     LS$
340  HTAB 4: PRINT RS$; SPC( 1);F
     F$; SPC( 6);RS$; SPC( 3);DI$
     ; SPC( 3);DB$; SPC( 3);HA$; SPC(
     3);PA$; SPC( 3);LS$; SPC( 1)
     ;LS$
350  HTAB 4: PRINT RS$;: FOR I =
     1 TO 31: PRINT "_";: NEXT : PRINT
     LS$
360  REM Menu Folder
370  HTAB 3: FOR I = 1 TO 15: PRINT
     "_";: NEXT : PRINT
380  HTAB 3: FOR I = 1 TO 6: PRINT
     LS$; SPC( 14);LL$;: FOR I =
     1 TO 20: PRINT "_";: NEXT : PRINT
390  FOR I = 1 TO 6: HTAB 3: PRINT
     LS$; SPC( 34);RS$: NEXT
400  HTAB 3: FOR I = 1 TO 36: PRINT
     OS$;: NEXT : PRINT
410  VTAB VT + 11: HTAB 4: PRINT
     0: FOR I = 1 TO 7: VTAB VT +
     10 + I: HTAB 9 + 4 * I: PRINT
     I;: NEXT : VTAB 23
420  FOR I = 1 TO 1500: NEXT I: REM
     Wait A Bit
430  PRINT  CHR$ (17);: REM Switc
     h To 40 Columns
440  FOR I = 1 TO 2500: NEXT I: REM
     Wait A Bit
450  PRINT  CHR$ (18);: REM Back
     To 80 Columns
460  VTAB 23: HTAB 1: REM End Of
     Screen
470  END
480  REM
Initialize Mouse Text Characters
490 MO$ =  CHR$ (15) +  CHR$ (27)
     :OF$ =  CHR$ (24) +  CHR$ (1
     4)
500 CA$ = MO$ + "@" + OF$
510 OA$ = MO$ + "A" + OF$
520 PT$ = MO$ + "B" + OF$
530 TP$ = MO$ + "C" + OF$
540 CH$ = MO$ + "D" + OF$
550 IC$ = MO$ + "E" + OF$
560 RM$ = MO$ + "FG" + OF$
570 LA$ = MO$ + "H" + OF$
580 UL$ = MO$ + "I" + OF$
590 DA$ = MO$ + "J" + OF$
600 UA$ = MO$ + "K" + OF$
610 OS$ = MO$ + "L" + OF$
620 CR$ = MO$ + "M" + OF$
630 BL$ = MO$ + "N" + OF$
640 LC$ = MO$ + "O" + OF$
650 RC$ = MO$ + "P" + OF$
660 DC$ = MO$ + "Q" + OF$
670 UC$ = MO$ + "R" + OF$
680 HL$ = MO$ + "S" + OF$
690 LL$ = MO$ + "T" + OF$
700 RA$ = MO$ + "U" + OF$
710 LB$ = MO$ + "V" + OF$
720 UB$ = MO$ + "W" + OF$
730 FF$ = MO$ + "XY" + OF$
740 RS$ = MO$ + "Z" + OF$
750 DI$ = MO$ + "[" + OF$
760 DB$ = MO$ + "\" + OF$
770 HA$ = MO$ + "]" + OF$
780 PA$ = MO$ + "^" + OF$
790 LS$ = MO$ + "_" + OF$
800  RETURN
```

The Secrets of AppleWriter's WPL

Richard Loggins

"Speaking of secrets, there's WPL, or Word Processing Language, which can be found hiding in every Apple Writer II, //e, or ///. It is amazing how many people haven't tackled WPL yet, and thus only use a third of Apple Writer's capabilities."

That quotation appeared in the October, 1983 edition of *Apple Orchard* Magazine, as the lead-in for a series of articles I authored about WPL. If you, as I, subscribed to Apple Orchard, you're well aware of the the end result: the second series, which provided detailed instructions for creating a database written entirely in WPL, met an untimely—and premature—demise, as did that magazine.

But time, people, and software are continually moving forward. What was appropriate and "state-of-the-art" then, is now obsolete. So it is with the WPL that existed in 1983.

This article will begin a new series on WPL and Apple Writer, to show you that where you once used only a third of Apple Writer's capabilities, now you only use a quarter. You'll discover how WPL can expand the capabilities of Apple Writer far beyond that of any other word processor, including WordStar.

Whether your interest is records management, automated document composition, communications (including your own bulletin board), or keystroke file manipulation, you'll find it all here. And by the way, we'll also take a look at how you can create, print—and even integrate—graphics, without leaving Apple Writer.

What You Should Know

Before we dive into all that technical stuff, let's lay down a few ground rules so no one gets lost. First, everything will be focused on the new ProDOS version of Apple Writer //. This means if you have a DOS 3.3 version, you'll have to change the filenames. If you're using an Apple ///, virtually everything will be identical.

Next, all **CONTROL** characters will be indicated the same way they are shown in the Apple Writer manual, enclosed with brackets. For example, **CONTROL-B** will appear as **[B]**.

All of the articles will assume you have two disk drives, and that your data disk will always be located in Drive Two. If you have only one drive, naturally you'll have to remove and insert your Apple Writer disk and your data disk as appropriate. Be sure to change all references from the second drive to the first.

Last, almost every WPL program that appears can be successfully used on any version of Apple Writer. Key items will be pointed out and explained as necessary.

Command Origins

WPL commands can originate from one of three sources: the keyboard, a text file on disk, or from within a text file as it is being printed.

When the command originates from the keyboard, it is called an *immediate* mode command, as it causes some time of action to occur immediately.

Commands that originate from a text file or a file as it is being printed are called *deferred* commands, since they do not cause any action to take place when they are originally created.

We'll classify all WPL commands as being deferred mode commands, and specifically, originating from a disk file.

Program Commands

Commands are a predetermined sequence of characters that make up a set of instructions. When Apple Writer encounters a particular sequence it recognizes as a command, it simply takes the appropriate action. Since the longest WPL command is only three characters, and is usually descriptive of its function, you'll find they're easier to learn than a foreign language or (heaven forbid) shorthand.

Moreover, you'll probably be surprised to learn *you already know more than half of all the WPL commands!* Every Apple Writer command you use to load and save files, move the cursor, find and replace text, etc., is also a valid WPL command.

Command Interpretation

WPL programs can use all of the commands you normally enter from the keyboard, plus several others (a complete list is in your Apple Writer manual). The secret to understanding the commands and their interpretation, lies in what you can't see.

For example, if you press [B] from the keyboard, you can see the **CONTROL** key being pressed. From a WPL program you can't. As a matter of fact, the actual **CONTROL** key is rarely used in a WPL program.

So how does one obtain **[B]** from a WPL program? By understanding and remembering one simple rule, which is called the rule for commands:

The first character in a line, that follows the first space in the line, is considered to be a CONTROL character.

Since it's difficult, if not impossible, to determine the first space in a magazine line, we'll substitute the underscore character for the first space in every program line.

So if you happen to have a line in your program that reads:

```
_B
```

Apple Writer would consider the "B" as a **[B]**, and would move the cursor to the beginning of your file.

The same procedure is used for commands that have para-

meters associated with them. For example, to clear the text editor, you press [N], the letter **Y**, and the **RETURN** key. In your program it would appear as:

```
_NY
```

Here, the letter **N** follows the first space in the line (represented by the underscore), is interpreted as [N]. This is immediately followed by the letter **Y**, the parameter associated with the command. The result is to clear the text editor.

To expand on this a bit, consider the steps that must be taken to change the left margin setting to five. From the keyboard, you press [P], followed by **LM5**, and press **RETURN**. In a WPL program, this would appear as:

```
_PLM5
```

The **RETURN** key, which you can't see, is at the end of the line, and was placed there when you entered the command.

Labels

WPL provides a method to control the sequence of command execution, called *labels*. These are nothing more than a sequence of characters designed by the programmer, and are generally descriptive of the commands that follow.

For example, examine the following WPL program portion, which contains three labels (**clear**, **change**, and **purge**).

```
clear
_NY
change
_PLM5
_PRM65
_PPM5
_PBM3
purge
_TP
```

If your program contained a command that in effect read: *go to change*, it would immediately proceed to the label **change**, and carry out the instructions following the label. This, as you can see, would cause the left, right, paragraph, and bottom margins to be changed.

After changing the bottom margin, the label **purge** is encountered. Since there have not been any commands directing the program to proceed to a different label, program execution would continue to the next command, which is a [T] followed by the letter **P**. As you know, this would purge all of the current tab settings.

Once the program completed the command following **purge**, it will end since there are no more commands to be executed.

Notice there is *no space* in front of any of the labels. Which brings forth the rule for labels.

If the first item in any line is not a space, then all of the characters that follow it—up to the first space—are considered to be a label.

So remember, all commands *follow* the first space in the line; all labels appear *before* the first space.

In summation, one can say that labels are to a WPL program what addresses are to mail carriers: they provide a method to identify a unique location. And like addresses, *no two should be the same!*

Entering Programs

Since we now have enough material to construct a few simple (but useful) programs, let's see how WPL programs are created and executed. To accomplish this, we'll write a program that can be used to save the text editor contents on disk, then print the text editor contents—all automatically.

So get your Apple Writer fired up, get into and clear the text

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editor. Then enter the following WPL program, making sure of three things: (1) the first item in each line begins at tab position zero, (2) all underscore characters are replaced by one "space" character, and (3) the **RETURN** key is pressed at the end of each line.

```
_P This program saves the text editor
        contents,
_P print, then clear the text editor.
_P
save.it
_S.d2/test.1     (See text below.)
print.it
_PNP
clear.it
_NY
end.it
_PQT
```

Figure 1 –Program Named WPL.1

DO NOT type in the portion that reads "(See text below)" as this indicates an item you must change to agree with your particular version of Apple Writer.

If you are using the ProDOS version of Apple Writer //, or Apple Writer ///, enter the line as shown in Figure 1. If you are using Apple Writer // or //e under DOS 3.3, replace that line with:

```
_Stest.1,D2
```

You see, being able to enter "**.d2/**" for Drive 2 instead of a volume name is one of the undocumented features in the ProDOS version, of which there are several. It's probably a leftover from the Apple ///'s SOS. (If you're interested in others, there's a book due out in either May or June titled *Apple Writer Made Easy* that has all of the undocumented features in it. It's published by Brady Communications Company, written by yours truly.)

If you have only one disk drive and are using the ProDOS version of Apple Writer, make the following entry:

```
_S.d1/test.1
```

After you have entered the program, save it on your data disk with the filename of **WPL.1**, clear the text editor and enter the sample text shown in Figure 2.

```
This is the sample text that will be saved on the
disk with the filename of TEST.1, then printed by
the WPL program named WPL.1.
  It demonstrates how many Apple Writer functions
can be automated, leaving you free for other tasks.
  Be sure to include the embedded form feed com-
mand, ".ff", at the end of your text.
.ff
```

Figure 2 – Sample Text

After you have entered the information shown in Figure 2, it's time to execute the WPL program. Make sure your printer is on and ready to print, the disk is in the appropriate drive, and then press **[P]**. This will cause the "[P]rint/Program" prompt to appear on your monitor.

In response to the prompt, make the entry (shown below) for your particular version of Apple Writer.

Apple Writer /// and ProDOS version of Apple Writer // using two disk drives: **[P]rint/Program: DO .D2/WPL.1**

Apple Writer /// and ProDOS version of Apple Writer // using one disk drive: **[P]rint/Program: DO .D1/WPL.1**

Apple Writer // with DOS 3.3 using two disk drives:
[P]rint/ Program: DO WPL.1,D2

Apple Writer // with DOS 3.3 using one disk drive:
[P]rint/Program: DO WPL.1,D1

As soon as you press the **RETURN** key, the WPL program will be executed. If everything doesn't go as planned, go back and check your program, paying careful attention to the first space (represented by the underscore) in each line.

Analyzing the Program

Although this program is short and simple, it presents the primary ingredients required for any WPL program: the correct use of labels and commands. Notice the three commands that consist of only a **[P]**. This signifies the information that follows is a comment, which is ignored during program execution.

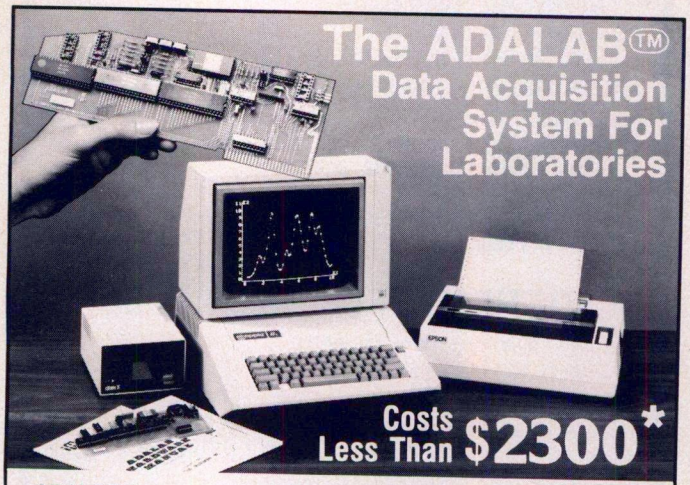
The four labels used in the program (**save.it**, **print.it**, **clear.it**, and **end.it**) are not required for successful operation. They are used to acquaint you with the differences between commands and labels, something that will become important as this series progresses.

With the exception of the last, all commands can be used from the text editor. In fact, you may understand this program better if you manually enter each command, in sequence, from the keyboard.

Coming Up

In the next article, we'll take a look at variables, controlling the video display, and a few input/output procedures that, when combined, can be used to print several copies of any text file automatically.

In closing, I would like to invite your comments and/or suggestions concerning WPL, Apple Writer, and this series of articles. You can send them in care of **Call A.P.P.L.E.**, or to me directly at: PO Box 39, Sugar Run, PA 18846.



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THE Spreadsheet Sheet: Data Analysis #11 — Multiple Regression

Jeffrey M. Jacques

IN the first article in our series on data analysis I promised you ten articles, culminating with an article on multiple regression. Well, at least I was right about the final topic. Since this is article 11, I seemed to have underestimated how much space was required. If only I could have used THE Spreadsheet to determine how many articles I needed. . . .

It is especially appropriate that we conclude with this topic since we now have: (1) the essential background to explore some of underlying components of multiple regression, and (2) the essential skills in using THE Spreadsheet to transform the formulae into spreadsheet equations. Let's begin with a short introduction to principles of multiple regression.

Some General Thoughts On Multiple Regression

In part 5 of our series we noted how to construct and use the simple linear model to summarize the relationship between two variables. (You might wish to take a minute or two to briefly review that article.) This time we will build on that knowledge and explore further how to construct and use our spreadsheet to describe and predict a variable of interest when we have more than one explanatory variable at the same time.

Actually, multiple regression is simply the logical extension of the simple (bivariate) regression model. The basic ideas are the same—how to fit a line so that: (1) it effectively summarizes the data, (2) enables accurate prediction, and (3) helps one to communicate the results.

We noted in article 5 that every observed value of a data set, when summarized with a fitted line, can be divided into two components:

Observed value = fitted value + residuals.

The fitted line in the bivariate case had only one variable, and took the form of:

$$Y = \text{intercept pt.} + \text{slope} * Xi + e$$

or

$$Y = B_0 + B_1 * X_1 + e$$

Well, sometimes the fitted line is not sufficiently precise or reliable for accurate prediction. It is often, although not always, the case, that we can improve our prediction of the variable of interest by adding one or more explanatory variables. When we have two or more explanatory variables in the equation, such an equation is called a multiple regression equation. When working with two explanatory variables, such equations typically take the form of:

$$Y = B_0 + B_1 * X_1 + B_2 * X_2 + e$$

Logically, we could extend the number of explanatory variables to include three, four, five or more variables. Each explanatory variable would be modified by its slope. These slopes would take into account the relative effect of each of the other variables.

Since we know from our earlier work how to compute the bivariate correlation coefficients (remember the Pearsonian r statistics examined earlier?), then we can use such statistics to estimate the slopes for each variable in the multiple regression equation. Using the equation above, letting b_1 estimate B_1 and b_2 estimate B_2, then:

$$b_1 = \frac{Sy}{Sx_1} * \frac{(r_{1y} - r_{2y} * r_{12})}{(1 - r_{12}^2)}$$

$$b_2 = \frac{Sy}{Sx_2} * \frac{(r_{2y} - r_{1y} * r_{12})}{(1 - r_{12}^2)}$$

and,

$$b_0 = \bar{Y} - b_1 \bar{X}_1 - b_2 \bar{X}_2$$

where:

- $\bar{Y}$ = mean of values of variable of interest
- $\bar{X}_1$ = mean of 1st explanatory variable
- $\bar{X}_2$ = mean of 2nd explanatory variable
- Sy = standard deviation of variable of interest
- Sx_1 = standard deviation of 1st explanatory variable
- Sx_2 = standard deviation of 2nd explanatory variable
- r_{y_1} = bivariate correlation between variable of interest and first explanatory variable
- r_{y_2} = bivariate correlation between variable of interest and second explanatory variable
- r_{12} = bivariate correlation between 1st and 2nd explanatory variables

If these slopes help us to accurately predict the values of Y, then the residuals should approach zero. This would indicate that we have a good fit between the observed values and the fitted line. The larger the values of the residuals, however, the poorer the summary provided by the fitted line and the poorer our predictive accuracy.

For those of you who wish some background on these statistics, here goes. All others may skip this paragraph. The multiple regression equa-

TABLE 11.1 MULTIPLE REGRESSION ANALYSIS TEMPLATE--Part 1

	A	B	C	D	E	F	G	H
1		Template	for	Multiple	Regressio n Analysi s			
2	----------	---------	---------	---------	---------	---------	---------	---------
3	Data Entry	Table:	Correlati	on Matrix	and Descr	iptive S	tatistics	
4	==========	=========	=========	=========	=========	=========	=========	=========
5								
6	Variable	Y	Correlati	on Coef.			Sum mary Stat	istics
7			X1	X2		Mean	St. Dev.	N.of Case
8	Var of Int	1				---------	---------	---------
9	Expl. #1	Enter#	1			Enter #	Enter #	Enter #
10	Expl. #2	Enter#	Enter#	1		Enter #	Enter #	Enter #
11	==========	=========	=========	=========	=========	=========	=========	=========
12								
13	NOTE: Pres s ! twice		before p rinting.					@IF(@OR(H8<>H9.H9<>H10.@ERROR.@NA)

tion and its summary statistics are computed on the basis of that path of mean values of the variable of interest for all combinations of the explanatory variables. More specifically, the basic idea is that for every combination of explanatory variables there is a mean and standard deviation score on the variable of interest. If we assume that these distributions approximate normality and the variances are about the same, then (in the three variable case) we can draw a plane through all these mean values such that we minimize the sum of the squares about this plane—i.e., the sum of the squared residuals. Now, that wasn't too bad, was it?

A basic statistic of multiple regression is the multiple correlation coefficient. This is one method of summarizing the "goodness of fit" between our variable of interest and our explanatory variables. The square of this value (R^2) is our old friend and has the same interpretation that we saw earlier for the bivariate case. Perhaps the best way to illustrate this value is to recall what we said about R^2 and its summarizing power in article 5, and then examine the following equation which expands its use to the multiple regression model.

$$R^2_{y.12} = r^2_{y1} + r^2_{y2.1} * (1 - r^2_{y1})$$

(Proportion explained by 1 & 2) (proportion explained by var. 1) (additional proportion explained by var. 2) (proportion unexplained by var. 1)

Or the total amount of variation of the variable of interest by the explanatory variables (X_1 and X_2) can be stated as the proportion of the variance accounted for by the first explanatory variable, plus the additional unique proportion explained by the second explanatory variable.

The only new value listed in this equation is $r^2_{Y2.1}$. This value is found by solving for the partial correlation coefficient. It simply tells us the correlation between the 2nd explanatory variable and the variable of interest after the impact of the 1st explanatory variable is removed. This makes logical sense since, in most cases, explanatory variables are correlated with each other to some (hopefully small) degree. Therefore we are only interested in that additional amount of variation accounted for by the second explanatory variable. This may be found by:

$$r_{y2.1} = \frac{r_{y2} - (r_{y1}) * (r_{12})}{SQRT(1 - r^2_{y1}) * SQRT(1 - r^2_{12})}$$

Of course, when we are working with such equations, and the data set is a random sample from some population, then we can test for statistical significance using our F–statistic.

$$F_{(k,N-k-1)} = \frac{R^2}{1 - R^2} * \frac{N - k - 1}{k}$$

where N = number of cases
k = number of independent variables
R^2 = coefficient of determination

(Although these ideas can be extrapolated to include any number of explanatory variables, we shall restrict our discussion to the three variable case.)

A Template For Multiple Regression

As we have carefully done for the last few articles, we shall construct a template for 3 variable multiple regression. We shall carefully divide our template into three sections: Part 1, columns A through H, shall be used for data entry; Part 2, columns J through Q, shall be used for summarizing the bivariate case; and Part 3, columns S through Z, shall be used for summarizing the multivariate case.

Parts 2 and 3 of our template shall use the data entry table of Part 1. In order to compute the multiple regression statistics efficiently, we must enter the bivariate and univariate values: the former being the values for the correlation matrix (r_{Y1}, r_{Y2} and r_{12}), and the latter being the mean, standard deviation and number of cases values for each of these variables. Where no data elements are missing, we can easily transfer the data from earlier worksheets. If there were data elements missing, then we might have to recompute the essential descriptive values, since every case must have values for each variable to be included in the model. To make sure that we have at least included the same number of cases for each variable, I have included in cell H12 an @IF statement to check that this is the case.

Part 2, columns J through Q, rows 1 through 12, provides us with the essential summary information where the first explanatory variable is entered into the equation. In this segment of the table, we present the coefficient of determination, the standard deviation of the regression line, and an ANOVA test of the value of R^2.

Rows 14 through 21 present the information on the actual equation in a

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summarized form. The slope, intercept (now called a constant), and a test of the value of the slope is reported here, although all computations are performed between rows 33 and 70. Now take a look at Table 11.1. (You might note that several rows are skipped. I have purposely skipped these rows so that the computational equations are on the same rows for step 1 and step 2. If you wish to add step 3, you will find this structure helpful. Also, please note that the width of most columns has been redefined to 9 characters rather than the default value. This enables you, if you have an 80 column card, to display each summary section for each part of the template. The blank columns will help you locate each part of the template. By modifying the width (/L) of the blank columns between each part you can easily control the printed output so that each part appears on a separate page.)

In rows 36 through 54 you will encounter our old friend the F-test. The computed significance value will be reported in cells Q7 and O18. This at first might appear strange, but, as we noted earlier, a test of R^2 is also a test of the significance of the slope—at least for the bivariate case.

Now for the interesting case, Part 3. In columns S through Z, the multivariate model statistics are calculated and presented. The tabular presentation follows that of the bivariate case, but with the additional essential data. Rows 1 through 12 present the values for Multiple R, R^2, its ANOVA test of significance, and the standard deviation of the equation.

Rows 14 through 22 present the equation statistics and tests for statistical significance of each of the two slopes. The actual values are computed in rows 33 through 55. Note that three F-tests are performed; one for the partial $r_{Y1.2}$ (from cell S43), one for the partial $r_{Y2.1}$ (from cell S38), and one for the significance of R^2. These F-tests may be /Reproduced from Part 2 of this template, being extremely cautious about when to use Relative and when to use No change.

Rows 57 through 71 are used to compute the equation statistics (i.e., slopes, standard error, and standardized slopes). As in all other parts of this template, I have carefully labeled each

TABLE 11.1 MULTIPLE REGRESSION ANALYSIS TEMPLATE--Part 2

	J	K	L	M	N	O	P	Q
1		Step: 1		Templat	e for	Analysis	of	Variance
2	---------	---------	---------	---------	---------	---------	---------	---------
3	Correla.	Summary	A.N.O.V.A	. Table	for:	dep var.	by	ind. var.
4	=========	=========	=========	=========	=========	=========	=========	=========
5	Y = b0 +	b1X1	Source	SS	df	Mean Sqr.	F-value	Signif.
6	---------	---------	---------	---------	---------	---------	---------	---------
7	MultipleR	+J38	Regres.	+K9*(G8^2)*(H8-1)	1	+M7/N7	+07/09	+P53
8								
9	R^2 =	+K7^2	Resid.	(1-K9)*(G8^2)*(H8-1)	+H8-2	+M9/N9		
10								
11	Stand.Dv=	@SQRT(G8^2* (H8-1)/(H8-2)) *@SQRT(1-K9))	Total	(G8^2)*(H8-1)	+H8-1			
12	---------	---------	---------	---------	---------	---------	---------	---------
13								
14				Equation	Summary			
15	---------	---------	---------	---------	---------	---------	---------	---------
16	Variable		slope	S.E.slope	F-value	Signif.		Beta
17								
18	X1		+J62	+L65	+P7	+Q7		+L18*(G9/G8)
19								
20	Constant		+J70					
21	---------	---------	---------	---------	---------	---------	---------	---------
/								
/								
/								
33								
34			Summary	Table	Computati ons			
35	---------	---------	---------	---------	---------	---------	---------	
36	Multiple	R					F-test	
37	---------	---------				---------	---------	
38	+B9					Sum.val.	F-value	
39						---------	---------	
40						df(num)=	+N7	
41						df(den)=	+N9	
42						F-value=	+P7	
43						---------	---------	
44						a-values	F-ratio	
45						.196854	@IF(P42<1.P41.P40)	
46						.115194	@IF(P42<1.P40.P41)	
47						.000344	@IF(P42<1.1/P42.P42)	
48						.019527	2/9/P45	
49							2/9/P46	
50							(@ABS(((1-P49)*(P47^(1/3)))-1+P48))/ (@SQRT(((P49*(P47^(2/3)))+P48)) @IF(P46<4.P50*(1+((.08*(P50^4))/(P46^3))),P50) .5/((P51*048+047*P51+046*P51+045*P51+1)^4)	
51							@ROUND(P52.4)	
52								
53						Signif=	@IF(P42<1.(1-P53).P53)	
54						---------	---------	
55								
56	=========	=========	=========	=========	=========	=========	=========	

	J	K	L	M	N	O	P	Q
58			Equation	Summary	Computati ons			
59	---------	---------	---------	---------	---------	---------	---------	---------
60	Slope-X1		Stand.Er.					
61	---------		---------					
62	+J38*(G8/G9)	SSres =	+M9					
63		SS/(N-2)=	+L62/(H8-2)					
64		SS of X1	+G9^2*(H9-1)					
65		SE of X1	@SQRT(L63/L64)					
66								
67								
68	Constant							
69	---------							
70	+F8-(J62*F9)							

Beagle Bros Apple® Software Report

"All the News That Fits"

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Summer 1985

NEW! *ProDOS Disk with Tip Book!*

PRO-BYTER™

$34.95 (Compatible with any Apple IIe, IIc or 64K II+/ProDOS™)

ALL-NEW— BYTEZAP PRO

Inspect ProDOS™ and DOS 3.3 disks at the byte level. Make changes, improvements and disk or program repairs that are normally impossible. An *all-new program* with instantaneous block-to-block (or sector-to-sector) viewing.

DISK SEARCH: Find any word or phrase on a disk. Automatically trace or search any file. Repair "zapped" disk bytes that might cause malfunction. Instant disk maps show which sectors or blocks any file occupies.

CUSTOMIZE DISKS: Easy instructions show how to make changes to disks, other programmers' programs, and DOS itself—a changed byte here and there can produce amazing results. Hey, this stuff is *FUN!*

NEW ProDOS UTILITIES

MACHINE LANGUAGE SORT: One CALL in your Applesoft program will alphabetize a list of words or numbers—*super-fast!* Works with normal string-arrays (*A$(1), A$(2),* etc.).

CONVERTER: Convert any Applesoft program line into machine code that can be CALLed by any Basic program.

TEXT TYPER: Read and print ProDOS text files (on your screen or printer) without having to boot another disk.

MORE: Put time and date of save in your disk catalogs. Print alphabetized lists of your ProDOS catalogs (including *all* hidden subdirectories). Make any Applesoft command work like any other. Scramble Basic so only you can read it...

MACHINE LANGUAGE EDITOR

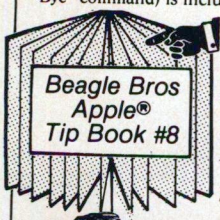
If you type in machine language programs from magazines, you'll *love* being able to make corrections by inserting and deleting code (no machine language knowledge required).

This easy-to-use editor also serves as a neat two-way-scrolling memory scanner. (Find out what's *really* going on inside your Apple's head.) The Pro-Byter manual shows you where in memory to look to find some very interesting stuff.

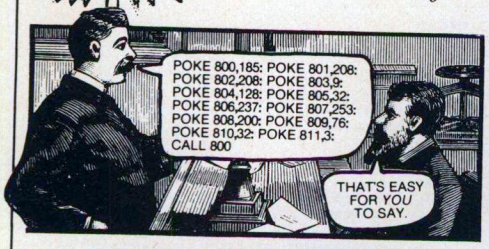
PLUS ALL-*NEW* APPLE TIPS

From the authors of DOS BOSS (Bert Kersey and Jack Cassidy)—page-after-page of juicy tips, experiments and inside info about your Apple. Learn secrets about Apple's new ProDOS operating system and Apple disk structure.

The latest official version of ProDOS (V1.1.1 with the new "Bye" command) is included on the Pro-Byter disk.



You get a GOLD MINE of tips, including: How to use memory like an extra disk drive (ProDOS lets you load & save files in RAM), How to disable the LIST command so it says "File Locked", How to disable or swap ANY command, How to change "Startup" to any name, How to personalize ProDOS catalogs...


POKE 800,185: POKE 801,208:
POKE 802,208: POKE 803,9:
POKE 804,128: POKE 805,32:
POKE 806,237: POKE 807,253:
POKE 808,200: POKE 809,76:
POKE 810,32: POKE 811,3:
CALL 800
THAT'S EASY FOR YOU TO SAY.

UTILITY CITY™

$29.50 (Compatible with any version of Apple II/DOS 3.3)

A-Plus Magazine Readers' Choice 1985 Product of The Year

21 USEFUL UTILITIES: ***List-formatter*** puts each statement on a new line with indented loops and printer page breaks. ***Multi-Cat*** lets you create multi-column catalog printouts. ***Filename Zap*** allows invisible and trick file names, etc. Utility City is for beginning as well as advanced Applesoft programmers—very educational.

SILICON SALAD™

$24.95 (Compatible with any version of Apple II/DOS 3.3)

OVER 100 PROGRAMS!

Program Splitter makes room for hi-res graphics in big programs, ***Disk Scanner*** finds bad sectors, ***DOS-Killer*** adds 2 disk tracks of disk space, ***2-Track Cat*** doubles the number of files, ***Text Imprinter*** converts text screen text to hi-res...

NEW! *128K Extended Memory Utility!*

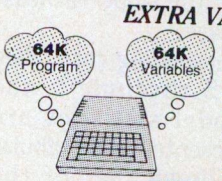
EXTRA K™

$39.95 (Compatible with any Apple IIc or 128K IIe/DOS 3.3 *and* ProDOS™)

PUT YOUR 128K TO WORK!

Even with 128K of memory, your Applesoft programs, pictures and variables only occupy and access the lower 48K. The EXTRA K disk contains several powerful programs that let you utilize *all* of that 128K capacity, speed and muscle.

EXTRA VARIABLES



Your Applesoft programs can now function undisturbed in main memory while all variables, strings and other data reside in your Apple's massive extra 64K. Everything functions normally—no special commands or procedures required.

EXTRA APPLE

EXTRA K lets you have two 64K Apples and programs in memory at once and switch between them at will. Plus, you can even have a ProDOS™ Apple and a DOS 3.3 Apple in memory simultaneously and swap files back and forth without subjecting yourself to Apple's *Convert* program.

EXTRA-FAST COPIES

Make disk copies fast and "on-the-spot" without re-booting! EXTRA K's "nibble copier" duplicates *and verifies* unprotected disks in 35 SECONDS instead of 1½ minutes. Thanks to your Apple's 128K, only 3-4 passes per disk are necessary.

EXTRA FEATURES

Compare any two disks, byte-for-byte. Create "dual personality" ProDOS/3.3 disks. Peek and poke auxiliary memory. Keep a live "logbook" of everything that has appeared on your text screen and review it when you want...

EXTRA SCREENS

Store all kinds of images in memory and display any one (all or part) instantly. Up to 7 hi-res pictures or 62 text screens can be stored at once. Call several pictures to the screen per second, opening up new Apple animation possibilities.

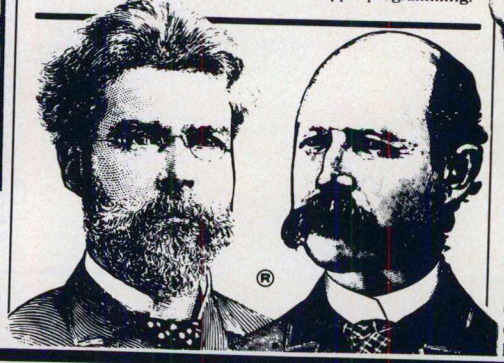
EXTRA K allows high-speed multi-screen switching.

DOS BOSS™

$24.00 (Compatible with any version of Apple II/DOS 3.3)

CUSTOMIZE DOS 3.3

Change *Catalog* command to *Cat,* or *"Syntax Error"* to *"Oops!",* or anything you want. ***Protect your programs:*** An unauthorized Save-attempt can print "Not Copyable". List Prevention, other useful tips and fascinating experiments. DOS Boss will teach you a ton about Apple programming!



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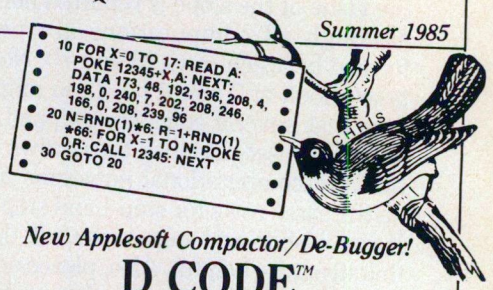


New Applesoft Compactor/De-Bugger!

D CODE™

$39.95 (Compatible with any version of Apple II/DOS 3.3 *and* ProDOS™)

PROGRAM PACKER

D CODE squeezes all of the wasted and unused bytes out of your Applesoft programs, saving valuable memory space and increasing your programs' speed and efficiency.

Automatically combine program lines, shorten variable names and/or remove REMarks. D CODE also uncovers wasted program lines that can't possibly be executed.

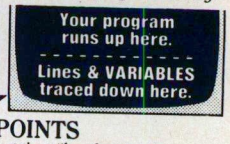
AUTO-PROOFREADER

Keyboard errors are caught as you type. If you enter an illegal program line, you are told immediately—*before* you (or worse—someone else) runs your program. Or you may simply type "CHECK" to scan an *entire program* in a couple of seconds and uncover potential crashes. If no mistakes are found, you get an immediate "NO ERRORS" message.

SUPER-TRACE

When a program stops or crashes, type "DUMP" to see the last 10-10,000 statements and line numbers that were executed, in the order executed—an instant program *history.*

D CODE features sophisticated "live" tracing too, with each executing statement, line number and selected variable values appearing in a window at the bottom of the screen:



BREAKPOINTS

D CODE lets you set up de-bugging "breakpoints" so your program stops when you want. For example, you can ask that your program be stopped the moment X gets set to 99, or the 3rd time a particular program statement is encountered.

LIGHTNING-FAST FIND!

D CODE lets you find strings and variables *fast*—even large programs can be searched in about *2 seconds!* All lines with a specified word are automatically listed with the word highlighted. This feature alone is worth the price of D CODE.

GPLE COMPATIBLE

D CODE remains "transparent" to your programs and is fully-compatible with GPLE, Double-Take, ProntoDOS, etc.

```
1  HOME: HTAB 5: POKE
   33,28: FOR C=1 TO 92:
   POKE 50,255-192*
   (C=4 OR C=64)
9  J=J+1-31*(J=31):
   PRINT CHR$(9+(J=1));
   SPC(2+(J<10))J; :
   NEXT: PRINT
85 POKE 33,1: PRINT
   "JULY..AUG..SEPT...."
```

Beagle GAMES

I. O. SILVER™

$29.95 (Compatible with any version of Apple II)

HI-RES STRATEGY!

I. O. SILVER is *both* a thinking person's strategy game and a fast-action arcade game. Your job is to create a hi-res "Super Computer" on the screen while avoiding a pesty gang of computer bugs. I. O. Silver's Strategy Workshop lets you plan your moves before each level. Excellent high-speed animation and hi-res action. Great for ages 12 & up.

SOURCE CODE: Programmers can get fully commented *I. O. Silver* Source Code on three 2-sided disks for $30. Ordering info comes with the game.

BEAGLE BAG™

$29.50 (Compatible with any version of Apple II)

12 GREAT BASIC GAMES

Voted by Apple software buyers to *Softalk's* "Top-30 Most Popular" list, Beagle Bag is one of the best Apple game bargains on the market today. All games are LIST-able, so you can see what makes them work, or make changes.

Print Pictures on Your Printer!

TRIPLE-DUMP™

$39.95 (Compatible with any version of Apple II/DOS 3.3 *and* ProDOS™)

PRINT ANY APPLE IMAGE

TRIPLE-DUMP lets your dot matrix graphics-capable printer print *(1)* Hi-Res and Double Hi-Res graphics. *(2)* Lo-Res and Double Lo-Res graphics. *(3)* Forty and 80-Column text screen text.

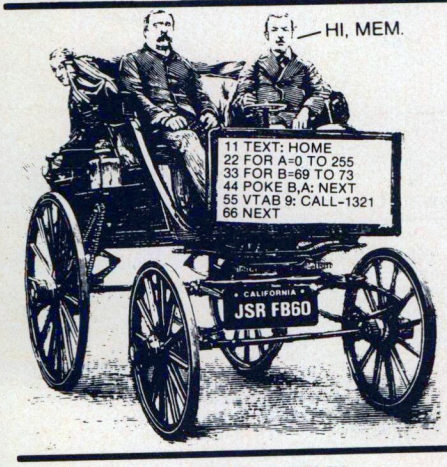
All kinds of images can be transfered to your printer with absolutely no programming knowledge. *Or* you can call Triple-Dump's routines from your own Applesoft Basic programs.

TRIPLE-DUMP gives you a full range of special effects—crop, rotate, magnify, compress, adjust density, etc.

GIANT BANNERS TOO

Print big signs and messages of all kinds (with 8½" high letters) on *any* kind of dot-matrix or letter-quality printer.

GIANT BANNERS



FATCAT™

$34.95 (Compatible with any version of Apple II/DOS 3.3 *and* ProDOS™)

APPLE-DISK LIBRARIAN

Organize your disk library! FATCAT enters all of your ProDOS and 3.3 disk catalogs into one or more "Master Catalog" for fast searching, sorting and printing. Find the files you're looking for and eliminate space-wasting duplicates.

You can update your Master Catalog at any time by simply letting FATCAT read in your new or altered disks.

ALPHABETIZE FILE NAMES

FATCAT will sort your ProDOS and 3.3 disks so they catalog in alphabetical order. Or you can re-arrange file names in any order. *Compare* any two files too, and find the differences.

DISKQUIK™

$29.50 (Compatible with Apple IIc or 128K IIe/DOS 3.3)

DOS 3.3 IN-MEMORY DISK DRIVE!

DISKQUIK makes your Apple IIc or 128K IIe think it has an extra drive connected to Slot 3. It's just like using a super-fast (hard-disk speed), silent drive. Catalog with a "CATALOG,S3" command. Save and load all kinds of files to and from RAM with normal commands (holds about *half* the data of a floppy).

MANY USES: For example, load often-used programs into memory when you boot, so they are ready to use.

PRONTO-DOS™

$29.50 (Compatible with any version of Apple II/DOS 3.3)

TRIPLE-SPEED DOS 3.3!

ProntoDOS lets you load & save files at triple speed. Hi-res pix, for example, load in under 3 seconds.

MORE RAM & DISK SPACE

Create high-speed bootable disks with 15 extra sectors of space. Move DOS 3.3 to your Language Card (64K reqd.) for an *extra 10K* of usable memory. Also: Pronto's new *TYPE* command instantly displays DOS 3.3 text file contents.

Hi-Res Shapes and Fancy Type!

APPLE MECHANIC™

$29.50 (Compatible with any version of Apple II/DOS 3.3)

HI-RES SHAPE ANIMATION

Your drawings are converted into hi-res "shape tables" so your programs can perform animation with Apple's built-in DRAW & XDRAW commands. *List and Learn* disk demos teach you how to create your own animated hi-res programs.

FANCY DISPLAY TYPE

Six proportionally-spaced hi-res screen-display fonts (both large and small) are included on the Apple Mechanic disk—

WESTERN: KLMN
apple: ABCDEFG
STENCIL: ABCDE

26 more typefaces are available on our *Apple Mechanic Typefaces*™ disk (sold separately: $20.00).

16-COLOR DOUBLE HI-RES GRAPHICS!

BEAGLE GRAPHICS

$59.95 (Compatible with Apple IIc or 128K IIe/DOS 3.3 *and* ProDOS™)

DOUBLE HI-RES

Access 16 hi-res colors and 560 (horiz.) x 192 (vert.) pixels (*twice* normal resolution) on your Apple IIc or 128K IIe.

AS AN ARTIST, you can draw, fill and label double hi-res pictures using just the keyboard, *or* your AppleMouse™, joystick, Koala Pad™ or Graphics Tablet. Easy-to-use icon-assisted *Cut & Paste* features make graphic manipulations easy. Any image section may be altered or re-located.

OR, AS A PROGRAMMER, you get 33 new commands for drawing, filling and manipulating double-res images. You can convert normal programs and pictures to double-res, save and load any image section, compress picture data to 1/3 disk space, produce double-res "slide shows" and more.

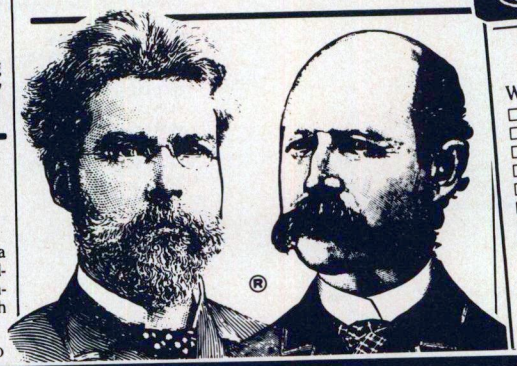
EXCELLENT REVIEWS—see Jan-85 *A-Plus* Magazine.

BEAGLE BASIC™

$34.95 (Compatible with unenhanced Apple IIe or 64K II+/DOS 3.3)

BETTER APPLE BASIC

Put Applesoft in RAM so you can change and improve it. Add new commands to Basic, like *ELSE, SWAP, TONE...*



Public Notice

Beagle Bros products are available at most Apple software stores. If your favorite dealer doesn't have a particular disk, get on his case. He can have it in his store for you in 2 or 3 days by phoning Beagle Bros or *any* U. S. Apple Software Distributor.

GPLE™

$49.95 (Compatible with any version of Apple II/DOS 3.3 *and* ProDOS™)

THE APPLE PROGRAM EDITOR

GPLE is Beagle Bros' "GLOBAL PROGRAM LINE EDITOR", the most popular, efficient way to edit Applesoft programs. GPLE works like a *word processor* for Basic program lines.

INSERT & DELETE

Now you can *quickly* make changes to your programs. No more awkward "escape-editing" to make changes. No more hassles with extra spaces in quote statements. No more slow "cursor-tracing" to the end of a line before pressing Return.

SEARCH & REPLACE

Find every occurrence of a string or variable in your programs. Or *replace* any word with any other. For example, change all X's to ABC's, or all "HORSE" strings to "COW".

FUNCTION KEYS

Define your own Apple "function keys". For example, ESC-1 can Catalog drive 1, ESC-N can clear the screen and type your name and address, etc. Customize your Apple with a set of ESC functions that perform any set of tasks that you want.

DOUBLE-TAKE™

$34.95 (Compatible with any version of Apple II/DOS 3.3 *and* ProDOS™)

2-WAY SCROLLING

Listings and disk Catalogs scroll both up *and* down, making file names and program lines easier and faster to find. You change scroll-direction with the Arrow keys. Machine language listings and Hex-Ascii dumps scroll two-ways too.

BETTER LIST FORMAT

Double-Take's easy-to-read listings have each Applesoft program statement on a new line for *fast* program reading.

BONUS FEATURES

A$="ABC"
X=3.14159
Y=255
← **VARIABLE-DISPLAY:** Instantly prints all of your program's variables in the order used, with their current values.

A$: 5 10 150
X: 10 20 3000
Y: 5 40 55 60
← **CROSS-REFERENCE:** Alphabetizes every variable your program uses, and displays them with their line numbers.

Plus AUTO-LINE-NUMBER, improved Re-Number, Hex-Dec Convert, Program Stats, eliminate/re-define the cursor...

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☐ Beagle Bag	29.50	☐ GPLE	49.95
☐ Beagle Basic	34.95	☐ I. O. Silver	29.95
☐ Beagle Graphics	59.95	☐ Pro-Byter	34.95
☐ D Code	39.95	☐ ProntoDOS	29.50
☐ DiskQuik	29.50	☐ Silicon Salad	24.95
☐ DOS Boss	24.00	☐ Tip Disk#1	20.00
☐ Double-Take	34.95	☐ Triple-Dump	39.95
☐ Extra K	39.95	☐ Utility City	29.50

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of the computed values.

But errors can occur. To test your template, therefore, I have included data from our income study. We have tabulated earlier in this series the univariate statistics (means, standard deviations, etc.) in article 1 and the bivariate r statistics in article 5. All we need do is to transfer these values from our earlier worksheets to our multiple regression template. Alternately, Table 11.2 will include the essential data for the variables of income, degree and sex. Take a few minutes and, after saving your template, enter these data. Press the ! key twice. Then check each of your cells to make sure that your equations yield the same

TABLE 11.1 MULTIPLE REGRESSION ANALYSIS TEMPLATE--Part 3

	S	T	U	V	W	X	Y	Z
1		Step: 2		Template	for	Analysis	of	Variance
2	---------	---------	---------	---------	---------	---------	---------	---------
3	Correla.	Summary	A.N.O.V.A	. Table	for:	dep var.	by	ind. var.
4	=========	=========	=========	=========	=========	=========	=========	=========
5	Y = b0 +	b1X1+b2X2	Source	SS	df	Mean Sqr.	F-value	Signif.
6	---------	---------	---------	---------	---------	---------	---------	---------
7	MultipleR	+S40	Regres.	+T9*(G8^2)*(H8-1)	2	+V7/W7	+X7/X9	+W54
8								
9	R^2 =	+S39	Resid.	(1-T9)*(G8^2)*(H8-1)	+H8-3	+V9/W9		
10								
11	Stand.Dv=	@SQRT(G8^2* (H8-1)/(H8-3)) *@SQRT((1-T9))	Total	(G8^2)*(H8-1)	+H8-1			
12	---------	---------	---------	---------	---------	---------	---------	---------
13								
14								
15	---------	---------	---------	Equation	Summary			
16	Variable		slope	S.E.slope	F-value	Signif.		Beta
17								
18	X1		+S67	+U65	+X42	+X54		+S66
19								
20	X2		+S70	+U71	+Y42	+Y54		+S69
21								
22	Constant		+F8-(U18*F9) -(U20*F10)					
23	---------	---------	---------	---------	---------	---------	---------	---------
/								
/								
/								

	S	T	U	V	W	X	Y	Z
33								
34	---------	---------	Summary	Table	Computati	ons		
35			---------	---------	---------	---------	---------	
36	Multiple	R			F-tests			
37	---------	---------			Mult.R	rY1.2	rY2.1	
38	(B10-(B9*C10))/ (@SQRT((1-(B9^2)) *@SQRT(1-(C10^2))))	= rY2.1		---------	---------	---------	---------	
39	(B9^2)+((S38^2) *(1-(B9^2)))	= R^2		Sum.val.	F-value	F-value	F-value	
40	@SQRT(S39)	= MultR		---------	---------	---------	---------	
41								
42				df(num)=	+W7	1	1	
				df(den)=	+W9	+H9-3	+H10-3	
43	(B9-B10*C10))/ (@SQRT((1-(B10^2))	= rY1.2		F-value=	+Y7	(S43^2/(1-(S43^2))*(H9-3))	(S38^2/(1-(S38^2)) *(H10-3))	
44	*@SQRT(1-(C10^2))))			---------	---------	---------	---------	
45								
46				a-values	F-ratio	F-ratio	F-ratio	
47				.196854	@IF(W42<1,W41,W40)	.....	@IF(Y42<1,Y41,Y40)	
				.115194	@IF(W42<1,W40,W41)	.....	@IF(Y42<1,Y40,Y41)	
48				.000344	@IF(W42<1,1/W42,W42)	....	@IF(Y42<1,1/Y42,Y42)	
49				.019527	2/9/W45	.....	2/9/Y45	
50					2/9/W46	.....	2/9/Y46	
					(@ABS(((1-W49)* (W47^(1/3)))-1+W48)) /@SQRT(((W49*(W47^ (2/3)))+W48))	.....	(@ABS(((1-Y49* (Y47^(1/3)))-1+Y48)) /@SQRT(((Y49*(Y47^ (2/3)))+Y48))	
51					@IF(W46<4,W50* (1+((.08*(W50^4)) /(W46^3))),W50)	.....	@IF(Y46<4,Y50* (1+((.08*(Y50^4)) /(Y46^3))),Y50)	
52					.5/((W51*V48+V47 *W51+V46*W51+V45 *W51+1)^4)	.....	.5/((Y51*V48+V47 *Y51+V46*Y51+V45 *Y51+1)^4)	
53					@ROUND(W52,4)	.....	@ROUND(Y52,4)	
54				Signif=	@IF(W42<1,(1-W53), W53	.....	@IF(Y42<1,(1-Y53),Y53)	
55				---------	---------	---------	---------	
56	=========	=========	=========	=========	=========	=========	=========	

	S	T	U	V	W	X	Y	Z
57								
58								
59	---------	---------	Equation	Summary				
60	Slope		---------	---------	Computati	ons		
61	---------	---------	Stand.Er.		---------	---------	---------	---------
62	+B9	= r01	+V9	= SSres				
63	+B10	= r02	+U62/(H8-2)	=SS/(N-2)				
64	+C10	= r12	+G9^2*(H9-1)	SS of X1				
65			@SQRT(U63/U64)	SE of X1				
66	(S62-(S63*S64)) /(1-(S64^2))	= B1						
67	+S66*(G8/G9)	= b1						
68								
69	(S63-(S62*S64) /(1-(S64^2))	= B2	+V9 +U68/(H8-2)	= SSres =SS/(N-2)				
70	+S69*(G8/G10)	= b2	+G10^2*(H10-1) @SQRT(U69/U70)	SS of X2 SE of X2				
71								

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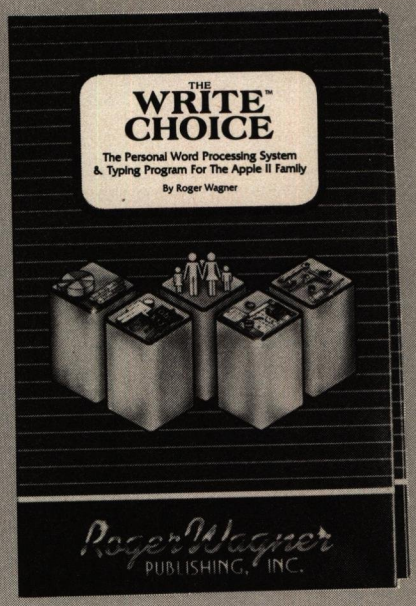
"THE WRITE CHOICE" is a unique software package for the Apple II family, which combines a full-featured **word processor**, a Hi-Res **typing instruction program**, and a **comprehensive documentation package** that instructs the user on the proper formats and appearance of written documents, punctuation rules and more!

"THE WRITE CHOICE" is ideal for family members new to computing, yet hard to outgrow because of its many features. THE WRITE CHOICE is also a favorite in schools because it is so easy to learn and offers such a wealth of reference information. Even experienced users appreciate the simple on-screen formatting.

THE WORD PROCESSOR

THE WRITE CHOICE word processor is easy to use for the beginner, yet has so many advanced features that it can grow with you. Just a few of these features include:

- "What you see is what you get" printouts; the screen displays the text exactly as it will be printed, plus **page breaks are displayed while you edit text.**
- Help commands that are available at all times. It's like having a built-in reference card.
- Cut and paste text anywhere in the document for quick and easy text editing.
- Search and Replace to correct any or all mistakes or errors.
- Document can be of any length; complete document can be searched for any word or group of characters.
- Underlining and full printer control with imbedded printer commands.



- When combined with The Printographer, you can even print Hi-Res graphics right in your documents.

THE ANALYST

THE ANALYST is a program that "reads" the documents you create and gives you a report showing the number of words used, the average word length, the readibility of your writing and the minimum grade level required to read your document. The numeric index is used by teachers and reading specialists to evaluate written material to assure maximum reader comprehension.

TUT'S TYPER

A combination keyboard tutorial and fun arcade game with Hi-Res graphics. Keyboard tutorial teaches fundamentals and proper typing technique. The game, "Tut's Tomb", is a fun way to develop your typing speed and accuracy. With 24 lessons in all, it keeps track of the last lesson, words-per-minute, and fast and slow keys for up to 25 different users.

TUT'S TYPER also supports the Dvorak keyboard option of the new Apple IIc with 24 specially designed lessons.

THE WORD PROCESSING STYLE MANUAL

The result of extensive research and compilation of accepted standards for letters, manuscripts, outlines, and reports, this is an invaluable guide to proofreading, capitalization, punctuation and much more. Many illustrations include sample letters, proper indentation and spacing for manuscripts, style guides for bibliographies and more.

Here's what people are saying about THE WRITE CHOICE:

"Fast, versatile, easy to use."
M.M., Los Angeles, CA

"When the price, $44.95, is considered, this may very well be the best software buy available today. . . ."
D.L.Y., Fresno, CA

"I prefer the Write Choice to Applewriter IIe, which has been my favorite until now. I will also start teaching The Write Choice to a group of 5th graders, and I'm sure they'll be pleased to have such an excellent alternative to The Bank Street Writer."
J.R., Whitefish Bay, WI

"I sincerely believe The Write Choice is the best possible package for education. . . I think your program would meet the needs of the majority of Apple owners."
M.T., San Francisco, CA

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values as those listed in Table 11.2. Now, that's not too tough for you and THE Spreadsheet.

Using the Summarized Values

Okay, now that we have computed all these values, what do they mean and how can they be used? Part 2 of this table demonstrated again that the variable of degree was a powerful predictor of income. The linear model, using degree as the explanatory variable, was statistically significant and explained more than half the variation in income. When sex was added to the equation, we could account for another 8% of the variation in income.

A good way to examine the impact of each variable on the dependent variable is to look at the standardized slopes—sometimes called Beta weights. While the slopes (bs) give you information on the impact of each variable on the variable of interest using the actual values, the standardized slopes (Bs) measure the impact on the dependent variable using the same scale (zero through 1). Since the Beta values have been standardized, they are directly comparable to each other. The Beta value which is largest has the greatest explanatory power on the variable of interest. It is no surprise, therefore, that the variables of degree and sex, degree is considerably more powerful than sex.

This procedure is also a good way to test how much unique variation is explained by each of two variables. You might wish to run the variables of rank and degree. Even though each had substantial bivariate correlation coefficients with income, the overall improvement in R^2 is not that great. Run it. You'll see what I mean. Even better, run your own data.

Other uses of such a procedure can be noted. They are best left to other sources, however. Feel free to pick up one or more of the references listed below.

REFERENCES

Blalock, Humber M. Jr. SOCIAL STATISTICS: REVISED SECOND EDITION. New York: McGraw Hill Book Co. 1979.

Champion, Dean. BASIC STATISTICS FOR SOCIAL RESEARCH. Scranton, PA.: Chandler Publishing Co. 1970.

TABLE 11.2 MULTIPLE REGRESSION ANALYSIS: INCOME BY DEGREE AND SEX

	A	B	C	D	E	F	G	H
1		Template	for	Multiple	Regression	Analysis		
3	Data Entry Table: Correlation Matrix and Descriptive Statistics							
5	Variable	Y	Correlation Coef.				Summary Statistics	
6			X1	X2		Mean	St. Dev.	N.of Case
8	Income	1				16449.45	5174.63	20
9	Degree	.71401	1			2.25	.7864	20
10	Sex	.32291	.06523	1		.5	.513	20
13	NOTE: Press ! twice before printing.							NA

TABLE 11.2 MULTIPLE REGRESSION ANALYSIS: continued

	J	K	L	M	N	O	P	Q
1		Step: 1		Template	for	Analysis	of	Variance
3	Correla. Summary		A.N.O.V.A. Table	for:		dep var.	by	ind. var.
5	Y = b0 + b1X1		Source	SS	df	Mean Sqr.	F-value	Signif.
7	MultipleR	.71401	Regres.	2.5937E8	1	2.5937E8	18.72048	.0006
9	R^2	= .5098103	Resid.	2.4939E8	18	13854916		
11	Stand.Dv=	3722.219	Total	5.0876E8	19			

Equation Summary

Variable	slope	S.E.slope	F-value	Signif.	Beta
X1	4698.293	1085.880	18.72048	.0006	.7140100
Constant	5878.291				

Summary Table Computations

Multiple R	F-test	
.71401	Sum.val.	F-value
	df(num)=	1
	df(den)=	18
	F-value=	18.72048
	a-values	F-ratio
	.196854	1
	.115194	18
	.000344	18.72048
	.019527	.2222222
		.0123457
		3.317107
		3.317107
		.0006350
		.0006
	Signif=	.0006

TABLE 11.2 MULTIPLE REGRESSION ANALYSIS: continued

	J	K	L	M	N	O	P	Q
59			Equation Summary Computations					
60	Slope-X1		Stand.Er.					
62	4698.293	SSres =	2.4939E8					
63		SS/(N-2)=	13854916					
64		SS of X1	11.75007					
65		SE of X1	1085.880					
68	Constant							
70	5878.291							

TABLE 11.2 MULTIPLE REGRESSION ANALYSIS: continued

```
      S         T         U         V         W         X         Y         Z
                Step: 2                   Template   for   Analysis     of   Variance
Correla. Summary  A.N.O.V.A. Table  for:              dep var.     by    ind. var.
Y = b0 + b1X1+b2X2  Source     SS        df     Mean Sqr. F-value  Signif.
MultipleR .7657247 Regres.   2.9830E8        2 1.4915E8 12.04800      .008
R^2      = .5863344 Resid.   2.1046E8       17 12379774
Stand.Dv= 3518.490 Total     5.0876E8       19

                          Equation Summary
Variable              slope  S.E.slope F-value  Signif.          Beta
   X1              4579.177  997.5261  19.73418   .0006          .6959076
   X2              2799.303  1529.151  3.144833   .0909          .2775159
Constant           4746.651

                    Summary   Table   Computations
                                        F-tests
                                        Mult.R    rY1.2     rY2.1
Multiple R                              Sum.val.  F-value   F-value   F-value
.3951090 = rY2.1                        df(num)=        2         1         1
.5863344 = R^2                          df(den)=       17        17        17
.7657247 = MultR                        F-value= 12.04800  19.73418  3.144833

.7329500= rY1.2                         a-values F-ratio  F-ratio   F-ratio
                                          .196854       17         1         1
                                          .115194        2        17        17
                                          .000344 12.04800  19.73418  3.144833
                                          .019527 .1111111  .2222222  .2222222
                                                  .0130719  .0130719  .0130719
                                                  3.239367  3.351894  1.335581
                                                  3.239367  3.351894  1.335581
                                                  .0007947  .0005743  .0909235
                                                      .008      .0006      .0909
                                        Signif=       .008      .0006      .0909
```

TABLE 11.2 MULTIPLE REGRESSION ANALYSIS: continued

```
      S         T         U         V         W         X         Y         Z
                          Equation  Summary Computations
  Slope                   Stand.Er.
 .71401 = r01                    1 = SSres
 .32291 = r02             .0555556=SS/(N-2)
 .06523 = r12             11.75007 SS of X1
                          .0687612 SE of X1
.6959076 = B1
4579.177 = b1
                                 1 = SSres
.2775159 = B2            .0555556=SS/(N-2)
2799.303 = b2            5.000211 SS of X2
                         .1054070 SE of X2
```

Kerlinger, Fred N. and Elazar J. Pedhazur. MULTIPLE REGRESSION IN BEHAVIORAL RESEARCH. New York* Holt, Rinehart and Winston, Inc. 1973.

Norusis, M.J. SPSS STATISTICAL ALGORITHMS, RELEASE 8. Chicago, Ill: SPSS Inc. 1979.

Runyon, Richard P. and Audrey Haber. FUNDAMENTALS OF BEHAVIORAL STATISTICS. Reading, Mass.: Addison-Wesley Publishing Co. 1976.

Corrections to THE Spreadsheet Sheet: Data Analysis #10

In the last installment of THE Spreadsheet Sheet (March, 1985), an equation on page 26 was misprinted. The following is the correct equation:

$$df = \frac{(\text{SUM}(\text{CONTRAST}^2 \times \text{STANDARD DEVIATION}^2 / N))^2}{\text{SUM}(\text{CONTRAST}^2 \times \text{STANDARD DEVIATION}^2 / N)^2 / (N-1)}$$

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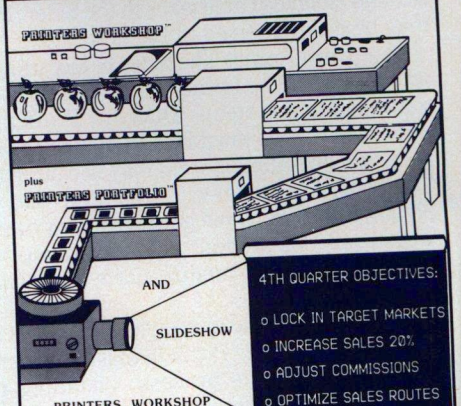

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Hardware Review: "The Sider" Hard Disk

Product:	The Sider
Use:	Mass Storage
For:	Apple II, II+, //e
Company:	First Class Peripherals 2158 Avenue C P.O. Box 6187 Bethelehem, PA 18001 1-800-538-1307
Includes:	Hard Drive, Card, Cables, Manual, Utilities
Price:	$695.00

Charlie Stillman & Butch Greathouse

A PRICE of $695 for a 10 megabyte hard disk drive for the Apple II+ and //e is so low it conjures up an image of orphaned equipment at the local electronics surplus store. Not so in the case of The Sider. The Sider comes by its low price honestly. Through a new design and direct marketing First Class Peripherals has been able to pare manufacturing and distribution costs.

DESCRIPTION: The 11-pound Sider is contained in a beige case 7.5" high by 3 3/8" wide by 16" deep—quite compact for external hard drives. There is no fan, and ventilation is achieved through extensive venting in the top and bottom of the vertically-oriented box.

INSTALLATION: The well-planned cabling makes physical installation straightforward. The host adaptor (disk controller), which plugs into slot seven is joined by a ribbon cable to a small junction box that you mount on the back of the Apple. From there, a round shielded cable leads to the Sider. If desired, a second Sider may be daisy-chained to the first.

You must format The Sider before using it. A utility program is provided to do the formatting and apportion disk space among the four operating systems: DOS 3.3, ProDOS, CP/M, and Pascal. A minimum of 95K must be assigned to each operating system, and no single operating system may use more than 93.5% of the total. The program is relatively straightforward to use, but several people have had problems getting the maximum space for DOS 3.3. The installation program could stand improvement here, although the procedure to maximize space is explained (cryptically) in the manual.

When formatting is complete, DOS 3.3 is installed on the disk. You must supply the ProDOS master to complete that system's installation—a simple process. Installing the others, especially Pascal, is much more involved. Also note that only the PCPI and Microsoft CP/M version 2.23 are supported at this time.

OPERATION: Once installation is complete, you boot directly into the hard disk when the Apple is turned on. The opening menu is in the DOS 3.3 partition, from which you may select any of the others that have been installed or choose to boot on slot 6. Several utilities are included. A modified version of FID supports multiple volumes for doing file transfers in DOS 3.3. It also includes a full volume copy, which is important if you wish to boot A.P.P.L.E.'s Spreadsheet Version 2.0 directly from hard disk. Unfortunately, copy-protected software cannot be copied to the hard disk by this utility.

An important part of any mass storage system is its capability to make backup copies. First Class Peripherals has a reasonable compromise system for guarding against the unthinkable (and fortunately rare) hard disk crash. Their archiving system keeps a directory of all backed-up files on one floppy disk, and instructs you to feed it other floppies as needed. This system has three shortcomings: If you want to do a full backup of the hard disk, you must feed it some 70 floppies. Secondly, the system does not support ProDOS at present. Finally, if the hard disk does crash, you will not be able to access the files again until the hard disk is repaired. If data must remain accessible, it would be preferable to use the standard file and volume copy utilities provided with each operating system to do backups. We suspect most people will not bother with backing up to floppy disk at all. In general hard disks are reliable, but any business anticipating the purchase of a Sider,e should consider the backup problem carefully.

The speed advantage of using a hard disk depends on the operation being performed. Catalogs appear almost instantly with the Sider. Our benchmarks (see Table 1) show that the advantage varies from almost 5 times (loading an Applesoft program) to virtually no difference (reading a sequential text file via a short Applesoft program). Note that the choice of operating system (ProDOS vs. DOS 3.3) is a more potent factor than the choice of hardware.

Table 1
FLOPPY VS. SIDER BENCHMARK
(Under ProDOS, DOS 3.3 in parentheses)

		RANDOM	SEQUENTIAL	BINARY	APPLESOFT
WRITE	FLOPPY	67 (143)	19 (52)	17	16
	SIDER	49 (96)	9 (42)	4	11
READ	FLOPPY	62 (128)	27 (50)	5	5
	SIDER	51 (95)	24 (51)	1.5	1

Times were recorded in seconds with a stopwatch. Text files were written and read using a small Applesoft program. Sequential file: 1500 records, 10 characters each. Random access file: 1500 records, 80 characters each. Binary file: 50 blocks. Applesoft file: 45 blocks.

ASSESSMENT: The Sider has been used constantly by the A.P.P.L.E. Hotline staff for three months with no problems. It has been especially handy in an environment where a new program is brought up every few minutes, eliminating the floppy shuffle. Not only is the Sider very reasonably priced but it also comes with a one year warranty on parts and labor. On the down side: backup utilities are lacking under ProDOS, the setup program could be better, and the manual needs general beefing up, especially on the documentation of the utilities. Overall, The Sider is a bold step for the Apple world.

What every Apple II+ and IIe user should ask before buying the "Sider" 10 MB hard disk:

When a company offers a superior quality 10 megabyte Winchester hard disk for only $695, it's bound to raise a few eyebrows...and a lot of questions. The fact is, you're probably already wondering "Can I really get a 10 megabyte hard disk that's *reliable* for only $695?" The answer is: ABSOLUTELY...when you choose the Sider from First Class Peripherals.

What's so great about the Sider?

For starters, the Sider lets you boot your ***Apple II+*** or ***IIe*** directly off the hard disk—unlike some other Winchester subsystems. Rebooting is also trouble-free. And the disk is partitionable, allowing you to allocate space to four operating systems on the same disk. The Sider supports: Apple DOS 3.3; Pro DOS™; Apple Pascal; and CP/M®

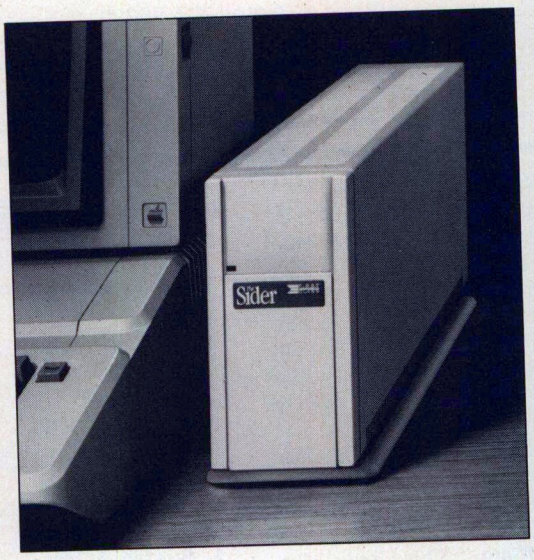
What's more, a small "footprint" lets you incorporate the compact Sider into your existing computer set-up with ease.

In addition, with the Sider, you not only pay far less for the subsystem, you also save money on installation. Because, unlike other 10 MB systems that require the purchase of expensive "extras," the Sider is *plug and play*. Everything you need is provided, including cables, host adaptor, installation software and manual.

What makes it so reliable?

To start, the Sider is manufactured, and sold exclusively, by First Class Peripherals, an innovative computer company which is backed by Xebec. The computer industry's leading manufacturer of disk controllers, Xebec has over a decade of experience serving customers like IBM, Toshiba, Texas Instruments and Hewlett Packard. It's this kind of expertise that helps assure the Sider's performance.

Special design features further enhance reliability. The Sider's controller is the field-proven, industry standard Xebec S1410A. And Xebec's 3200 drive tester, the toughest in the industry, ensures that the Sider will operate reliably. One more assurance of the $695 Sider's quality: it's UL Approved and FCC Class B rated.



"Only $695?"

But why is it only $695?

You pay less for the Sider than for other 10 MB hard disks simply because you're paying for the superior quality components inside the unit, not for a lot of retail overhead costs. Since First Class Peripherals sells direct, you avoid dealer and distribution expenses, and pay only for the product.

What about a guarantee?

Like many experienced Apple users, you may be reluctant to buy a hard disk priced at only $695 without first seeing for yourself how it performs. That's why First Class Peripherals offers you a reassuring, money-back guarantee that eliminates any risk on your part. Simply order the Sider and use it for 15 days. Then, if you're not entirely satisfied, return it and receive a full refund—no questions asked.

The Sider also comes with a full one-year limited warranty. Plus, there's a convenient, toll-free hotline you can call anytime you have a technical or service question, or need help.

Don't delay. Order the Sider now.

To receive the Sider 10 megabyte Winchester hard disk subsystem for only $695, simply order using the coupon below. For faster service, order by phone and charge to your VISA, MasterCard or American Express. (You can also call us if you have any questions or technical concerns about the Sider. We'll see you get the help you need.) Call toll-free:

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Software Review: "Mac Spell Right"

Product:	Mac Spell Right
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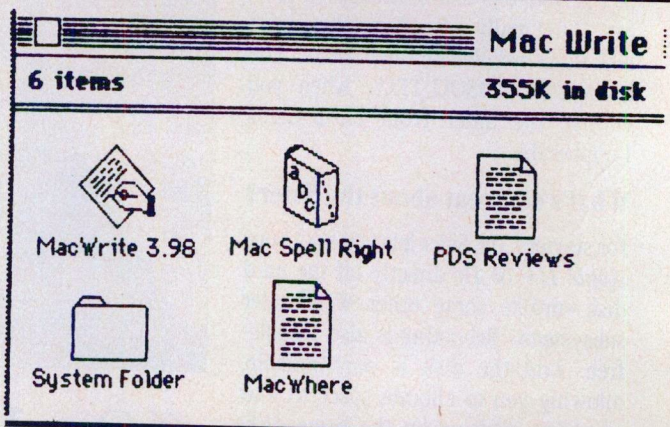
For:	Macintosh 128k or 512k, with MacWrite 3.3 or later
Company:	Assimilation, Inc. 485 Alberto Way Los Gatos, CA 95030 (408) 395-7679
Includes:	Master disk, backup disk, manual
Price:	$89.00

Douglas Fraser

BEING one of the Western World's truly bad spellers, it was with breathless anticipation that I awaited the arrival of Mac Spell Right. At long last my poetic soul would be free of the constraints of proper syllabification. All this and more, mine for a price.

The question now is, does it do what it says? Unequivocally, yes. With some short-comings (but about those later). The one big plus about this spelling checker is that it mounts inside of MacWrite, and becomes just another pull down menu. See the screen dump in Figure 1.

As the package comes, there are two versions on the disk, one for a single drive, "Spell Only", and a two-drive "Spell/Thesaurus." You copy across the one you want (I'm using the single-drive Spell Only) to your MacWrite disk (version 3.3. or above) and rename it "Mac Spell Right." This allows MacWrite to find the spelling checker when it boots and mount it in



the pull down bar. Congratulations, you have just lost 86K of disk space. It could be worse. The two drive speller is a 180K document.

Now when you finish typing (or at any time), position the MacWrite cursor at the start of the unchecked text and pull down the Spell bar (Figure 2).

The check window opens over your document and lists the four commands "Find Next," "Change," "Add Dictionary" and "Add Document." (I tried to take pictures of these, but for some reason the system would not allow it.) Clicking on "Find Next" starts the search.

Words we recognized by the dictionary are found and displayed along with the best guess as to what you meant to type. At this point, you may accept the dictionary version (click on "Change"), search the dictionary for a better match (with the up/down arrows), add your version of the word to the dictionary, or disable that word from being flagged again by "Add Document." This function is great for proper names that may appear more than once but really don't belong inside a dictionary, as in an article about computers that mentions IBM a dozen times. The "Add Document" would tell the checker to ignore IBM for the rest of the article.

The thesaurus opens a page of the dictionary showing about 45 alphabetized words. There is a scroll bar at the bottom with three command buttons that allow you to cut and paste to your document. With two disk drives you can use the full blown thesaurus for listing of synonyms.

There are two small points about Mac Spell Right that bother me, and I stress small. First, if you are using the up/down arrows in the "Check" window, the words go by too fast to read. Even clicking the mouse as fast as you can allows two or three to skip by. This makes it rather difficult to pick a spelling. Second, if you cut from the thesaurus and paste into your document, the word comes up as 12 point Geneva no matter what you were using.

All in all, Mac Spell Right is a well written application that functions as advertised. And if you spell no better then I, you may suffer without it.

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by Professor Jones

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MacinTips — I Like Ike-ons

Ken Watters

IN A PREVIOUS article, I mentioned how to bring out that hidden icon that might be lurking within an application. Now we're really going to get into it, by creating a new icon more or less "from scratch".

You have probably noticed by now that there are two types of icons, the so-called "generic," or hand-on-paper, and all those other neat custom ones. By making use of a few utilities, and borrowing parts of programs that have their own icons, we can give any program any icon we want to use.

The needed utilities can be downloaded from CompuServe. I refer you again to a previous article on how to do this. The needed programs are Resource Mover (or Rmover), Fedit, and Resource Editor (or ResEdit). You should have all these applications on the same disk with the file which is to receive the new icon (the target), and the file which is to "donate" resources (the source). Figure 1 shows a folder with the files all ready to start.

A word of caution at this point. These utilities are not iron-clad guaranteed crash-proof commercial products. They are tools developers use, and still have bugs in them. They have the potential of damaging programs and disks, so make absolutely sure that everything you are working with at this point is a copy, including the disk! If you don't believe me, select "About ResEdit" under the Apple menu and read what the authors have to say.

Macintosh programs, or applications, are made up of modules called "resources." We are going to copy three resources from the source file to the target, and then create a new resource within the target. We then need to change the icon we have pasted into the target to the design we want, and finally take a few steps to make sure our new icon will be displayed. Of course, the source file must have its own non-generic icon in order for us to use it.

Once you have your programs all together on the disk, start by double-clicking "Rmover." You will see a list of the programs on the disk. Select the source file with a click, then click

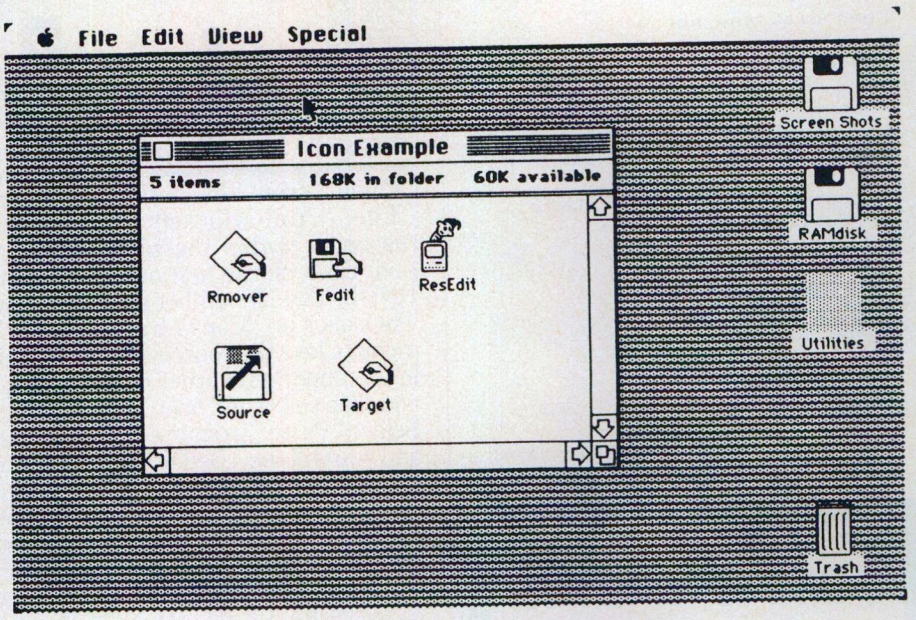

FIGURE 1 The desktop at the start of the icon transfer.

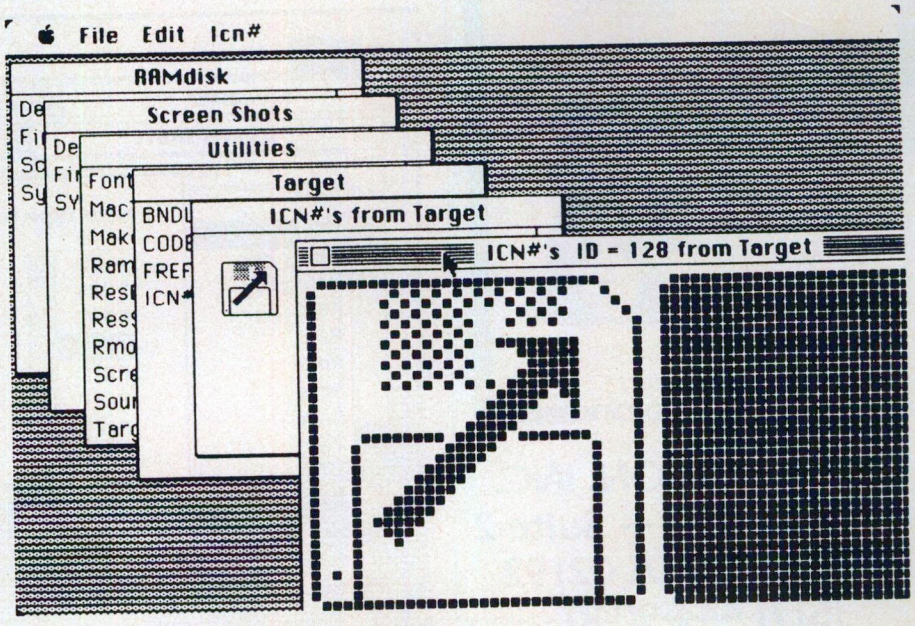

FIGURE 2 The icon ready to be edited.

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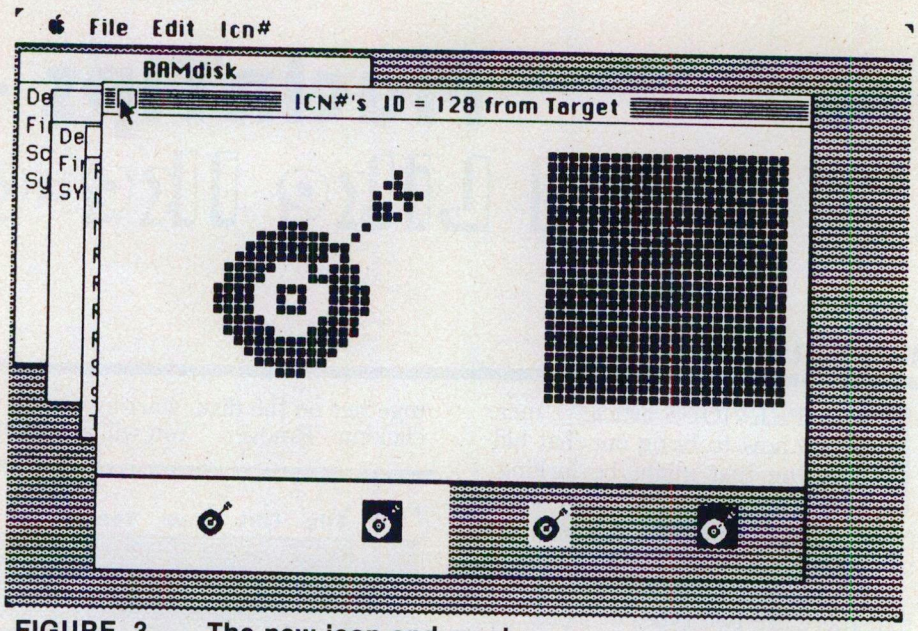

FIGURE 3 The new icon and mask.

"Open" from the menu bar under "File." You will see a list of the resources within the source application. Click on the first one to transfer, BNDL. The ID number should be 128. Then click on "Copy" from the "Edit" menu. Close the source file by clicking in the upper left corner of its window, and then select and open the target file. Select "Paste" from the "Edit" menu, and you will see "BNDL" appear in the target file. Now close the target file, go back to the source, and get the resource "ICN#." The ID should also be 128. Paste it into the target and finally go back and get the resource called "FREF," also ID = 128. Paste it into the target, and then quit Rmover.

Now open "ResEdit." You will see a list of all applications on all disks you have on line appear. Click on the working disk (if you have more than one drive) to bring it to the front. Double-click "Target" to open it, and you will see a list of all its resources, including the new ones you just added to it. You want to do something original to the icon you transferred, so double-click on "ICN#" and you will see a picture of the borrowed icon. Finally double-click that and you will see something like Figure 2, which is the "old" icon ready to edit. Edit the left-hand image just like working in "Fatbits" on MacPaint, by turning pixels on and off. When you have your masterpiece created, select "Icn#" from the menu bar. This will duplicate your icon in the right-hand panel. You now need to fill in every pixel within the icon in the

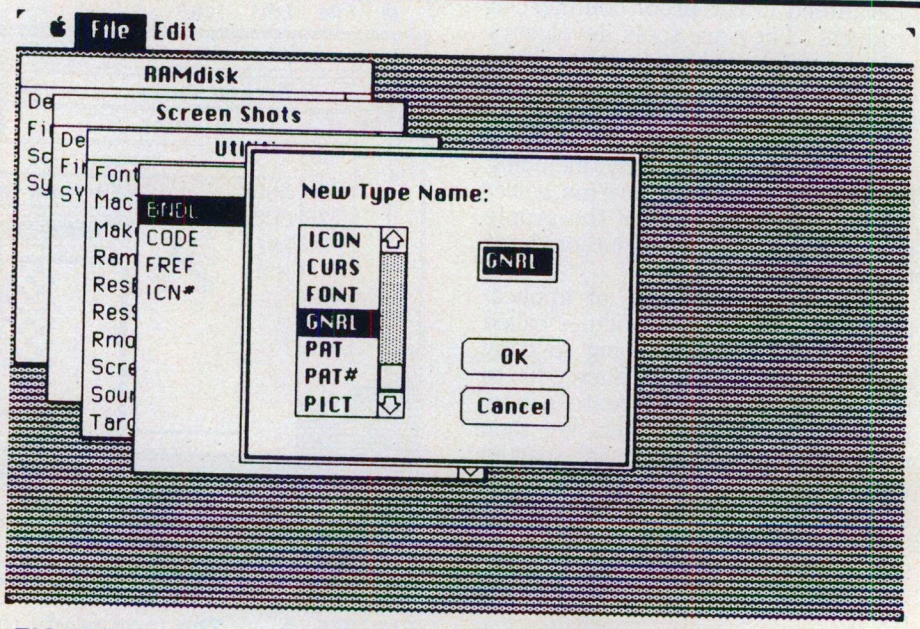

FIGURE 4 Making a new resource for the target.

right panel to make a "mask". This is used when the icon is selected on the desktop. Figure 3 shows this process completed. The mask is probably larger than need be, but you want the "negative" of your image to look as good as the positive.

When your icon is finished to your satisfaction, close the top two windows until you are again looking at the list of resources in the target application. In doing this, you will be asked if you want to save the target. Answer "Yes" so that your new icon will be saved.

The next thing we must do is make up a 4-character designator for the file creator. This can be anything you want, as long as you are consistant. For this example, I used "IKON." Double-click on the "BNDL" resource in the target file, and you will see a single "BNDL" entry. Double-click that and you will see a box with, among other things, the "Creator" designator. Change it to your new 4-character code and close BNDL until you are again looking at the list of resources in the target. Now select "File" from the menu bar, and select "New". You should be looking at something just like Figure 4. Type in the name of your creator ("IKON" in this case), and click "OK." You will see a new resource appear with the name you just gave it. With the new resource selected (not opened), use "Get Info" from the "File" menu to change its ID to "0." Close the target application and quit ResEdit. Hang in there, as we are just about done.

The only job remaining is to set the bundle bit, and if you have followed things so far, this is a piece of cake. Open Fedit by double-clicking, and select "Open File" from the "File" menu. Open the target application. Now from the "Display" menu select "File Finder Attributes." You will see the display shown in Figure 5. Click next to "Bundle" to set the bundle bit, and change the "Creator" box to your new designator. Now click change, then close the file by clicking the upper left corner, and finally select "Quit." Close your eyes and open them when the disk drive stops. Isn't your new icon nice? You bet! Was it worth all the hassle? Sure, it was. Believe it or not, it gets a lot easier with repetition.

In order to simply change an existing icon, all that's needed is to use ResEdit to edit it. In order for it to appear on the Desktop, however, you must "trash" the Desktop file so that it can be rebuilt with your new icon included in it. This is not necessary when creating a new icon. Now there is no reason for all your programs not to look "homemade".

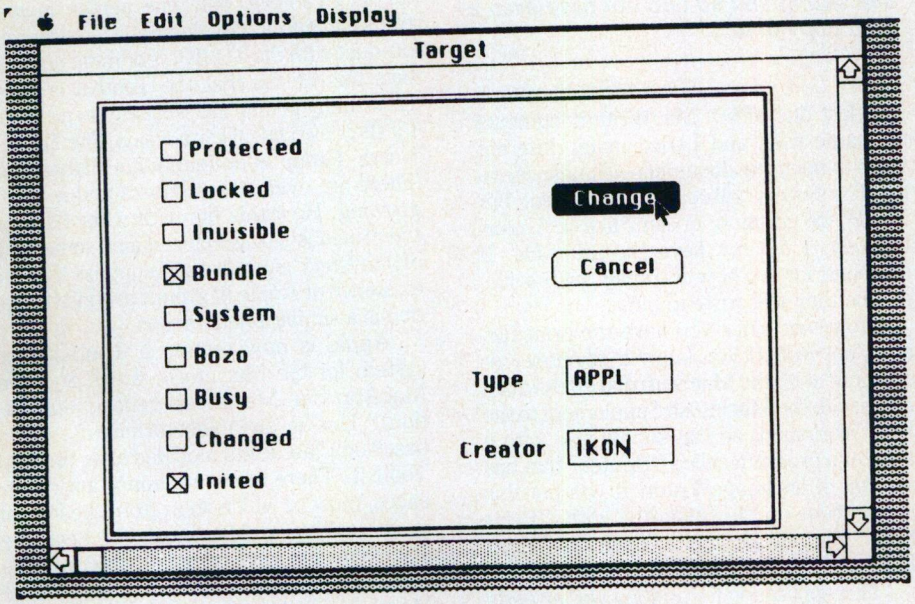

FIGURE 5 The bundle bit has been set, and the creator name changed.

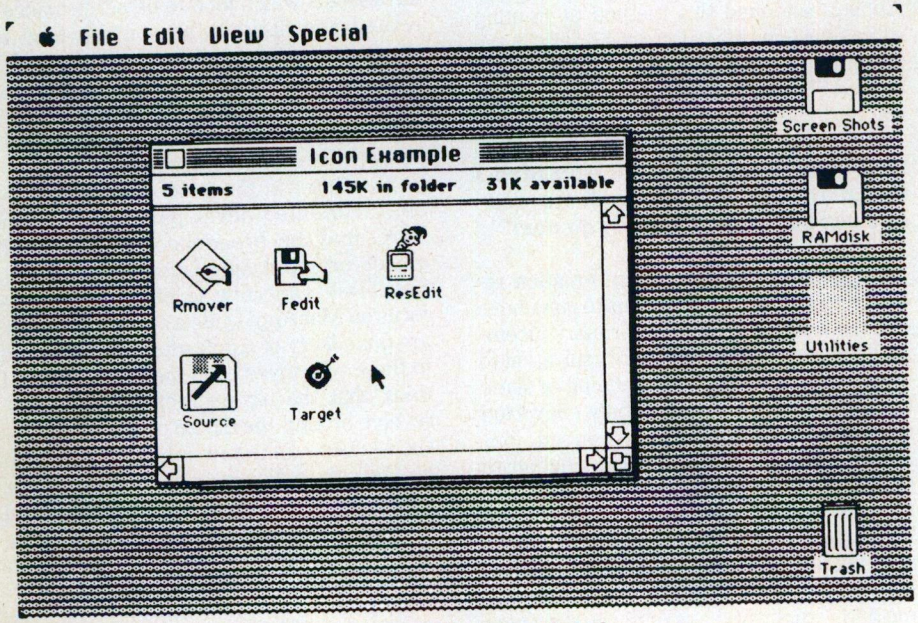

FIGURE 6 The icon change is complete!

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Something Over 32 Bits

Questions & Answers About Apple's Lisa and Macintosh 32-bit Computers

Dave Redhed

I am a little hampered by MacWrite's page limitation on my 128K Mac—is Microsoft's Word program for $195 the only solution to my problem?

It all depends on whether the page limitation of MacWrite is really your only objection to using MacWrite. If it is, I think your best investment would be to go to a 512K Mac which will increase the MacWrite limitation to about 70 pages. While the upgrade is more expensive than $195, you also get advantages for almost everything else you do on the Mac. Another way to eliminate the page limitation is to switch to the disk-based MacWrite which is floating around in various pre-release forms. However, I hear that it is still unreliable.

If you also want more functions in a word-processor, you may be wise to consider Word. It has many more capabilities than MacWrite, but the price is not measured only in dollars. There are many more commands and the list of COMMAND/SHIFT/OPTION combinations begins to remind me of (if you'll forgive the vulgarity) Wordstar. I try to stick with the simplest tool that gets my job done. Formal documents with footnotes require the sophistication of Word while columns like this can easily be done on a tool as modest as LisaWrite (or is that Mac-XLWrite?). (Note: There was a short review of Word in the March '85 Lisa/Mac SIG newsletter and a longer one in issue 22 of *Signal*.) I do not know of a third word processing system on Mac at this time.

I was printing a large MacWrite file when the system hung and I had to restart. Now, every time I try to open the MacWrite document the system bomb comes up and I have no option but to reboot. I can see a file called "Print File," but if I try to open it, the system says that there is no application available to open this document. I am resigned to losing my MacWrite document, but is there some way for me to get that document file printed? I had just created this file in one sitting and so I do not have even a draft copy of it.

I lost one of my MacWrite documents the same way, and I tried many different ways to open the document—all unsuccessful. The system will copy the document, but MacWrite certainly doesn't like it. Unfortunately, I did not have the print file. If someone knows how to repair such a file, maybe they will write to me.

However, since you have the print file, all is not lost! If you know a developer or someone with the MacStuff diskettes which come with the Macintosh Supplement to the Lisa Workshop, he can supply you with a copy of a program called "Printer" that has an icon of an ImageWriter. If you put this application on the diskette with "Print File," you will be able to open the "Print File" and the document will be printed.

This application for printing was an early version which allowed print files to be spooled by an application instead of being printed immediately. As far as I can tell, Apple abandoned this method of printing some time ago—it is discussed briefly in the printing section of Inside Macintosh. I located "Printer" on one of my early diskettes.

Now that I have my Lisa 3.0 Workshop, I find that your QuickDraw-Demo diskette will not work. What do I do next?

While you have all the information required to modify the programs to run under 3.0, it is a bit involved. The primary incompatibility comes from the re-organization of intrinsic libraries and the changing of some library file names. I have a fully converted version of the diskette prepared, but A.P.P.L.E. has not yet decided whether to market it. With the demise of Lisa (except for use by Mac developers) they did not know if there would be any demand for the new version. Should you decline the challenge to convert it yourself, you could write me and I might find a way to copy the new one on your diskette for a nominal fee. (Unless, of course, someone at A.P.P.L.E. reads this and decides that they really do want to market the new version.)

What's happening with the Lisa ToolKit? After Apple's announcement about the Mac XL is the ToolKit really dead? Is the ToolKit Users' Group disbanding?

Because Apple sold over 350 ToolKits and is not supporting the ToolKit, the 350 or so owners are the ones who determine what will happen. I have personal contact with some of them, and the activity varies from zero to not a whole lot. Several people really want to do something with the ToolKit, but mostly it is a part-time effort arising from a personal interest in a very powerful tool. As far as I can tell, only one person is even thinking about developing a commercial product with the ToolKit. For most pragmatists this means that the ToolKit is dead. How many people are working on products for their own use, I cannot say. The ToolKit Users' Group is definitely not disbanding. There are over 100 members and it is still growing. How this fits with what I said in the previous paragraph remains something of a mystery, even to me. I suppose that the existence of Apple *III* groups around the nation is a similar phenomenon.

Apple is now testing a ToolKit-like system for the Macintosh, which is called MacApp (for Macintosh generic application). This is an object-oriented system based on Clascal and modeled after the Lisa ToolKit. There are some important differences, most of which stem from the lack of multi-tasking in Macintosh. In Lisa, the ToolKit had to have complete control of the user-interface to avoid lock-outs. Under MacApp, an application can pick and choose what will be done by MacApp and what the application will do itself. This has advantages which tend to be performance-related and disadvantages which tend to show up as inconsistencies in the user-interface.

Almanac #2 (the TUG newsletter) was published in March and the membership is being polled for opinions about how to relate to MacApp and the general technology of object-oriented development languages. TUG may be broadened to include all object-oriented languages (e.g. Clascal, SmallTalk, Objective-C, etc) or switch to a focus on MacApp. Quite a number of people are quite leery of Apple after what they did to those who invested in the Lisa ToolKit. I think that the big decision for TUG will revolve around the desire of people to pursue MacApp. Like it or not, Apple seems to be the only major microcomputer vendor who is putting an effort into this area—and they are doing it mostly with MacApp. To me, this means that a serious interest in object-oriented development will have to focus primarily on MacApp and wherever else Apple goes with it in the next few years.

For those who are seeing the terms "ToolKit" and "object-oriented" for the first time, I would point you to my article in the June 1984 *Call -A.P.P.L.E.* This also contained a reference to several Smalltalk-80 articles in the August '81 *Byte*.

I have heard a rumor about Smalltalk running on Macintosh. Is it true?

Only if you accept Apple's new definition of Macintosh. Smalltalk is available, but it requires a megabyte of RAM and a hard disk to execute, restricting it to the "xtra large" Macintosh—you know, the CinemaScope version of Macintosh without stereophonic sound.

One of the most interesting aspects of this Smalltalk is the way Apple is marketing it. Apple is not supporting it as a product, but they will sell it to you for what it takes to reproduce it. You can get it for just $45 and it comes on 6 diskettes which run under MacWorks. This includes:

- Object Image (version 1)
- Smalltalk-80 source code
- Macintosh XL interpreter
- Sample Smalltalk files
- Documentation (lean) covers only
- Installation and operation
- Macintosh specific features

I have it on good authority from Kurt Schmucker, a member of the ToolKit Users' Group, that this is a very well done program. It is interpretive and consequently not very fast, but as with other interpreters, all modifications become effective immediately after they are made. Since one of the primary features of Smalltalk is its ability to extend the existing functions, the interpretive mode is very powerful. You will need quite a bit of disk, since its installed form takes about 3 megabytes (For those who are fascinated by numbers, Smalltalk costs $.0015/byte). You can get an order blank by writing to Apple Computer, Inc., Software Resource Center, Mail Stop 2-P, 20525 Mariani Ave., Cupertino CA 95014. Do not order it from this address—just request an order blank.

Anyone not familiar with Smalltalk will need the published text books on Smalltalk-80 or their equivalent—no significant documentation about Smalltalk itself is included with the $45 package. Any large university book store will probably carry the Smalltalk-80 books. A good place to start is the August '81 *Byte* which had a number of articles on Smalltalk.

Is a printer buffer a good investment for Mac?

I do not know a fully authoritative answer to this, but from some of the comments I have seen around, it would appear that you would need a very large buffer to do much good and even then it could be questionable. One report on CompuServe said that a 27K MacWrite file filled up a 32K buffer 8 times before it finished printing. That is not very encouraging since your only gain in time will be overlapping the 8th filling of the buffer.

The problem is two-fold—the amount of information contained in a printer image is quite large, and the computation time required to create the printer image is not small compared to transmission time to the printer. The reason buffers work so well on the Apple II is that the data to be sent to the printer is exactly what is sitting in memory—no real computation is required. If the buffer is about the same size as memory, the computer can finish the job in the time it takes to transmit it to the buffer.

Dot matrix printers are designed to work most efficiently with a stream of ASCII codes which get mapped into the fonts built into the printer. Apple Computer has done some wonderful things by using low-cost printers to do fairly high-quality graphics, but memory sizes and processor speeds will both have to take a jump before they can compete in speed with the rather low-density images made by the built-in fonts of dot-matrix printers.

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Bruce F. Field

SORTING SPREADSHEET FILES

A few months ago someone asked a question about sorting Visicalc files (or any other spreadsheet files). Anthro-Digital, Inc., 103 Bartlett Avenue, Pittsfield, MA 01201, telephone (413) 448–8278 sells a program called Versacalc!16 that will sort Visicalc files in ascending order or descending order. The file must be saved as a "print to disk" file which generates a standard DOS 3.3 text file where each row of the spreadsheet is a single string. When Versacalc is run, it sorts each row according to the first column and then converts the file back to Visicalc format. You must reboot Visicalc and reload the file.

STRETCHING APPLEWORKS' MEMORY

I also replied recently that Appleworks can only use 64K of memory on an extended 80–column card in the Apple //e. I also mentioned a somewhat negative review in *InfoWorld*. I must have struck a nerve as this generated some fast return mail. It turns out that with the MemoryMaster //e 128K 80–column card from Applied Engineering (P.O. Box 798, Carrollton, TX 75006, telephone (214) 492–2027) you can also get a preboot program that modifies Appleworks to use the card, thus providing 101K of usable workspace. There are at least two users who are very happy with this expanded Appleworks.

SCREENWRITER GET BUFFER

Larry Nebron of Daly City, CA wrote to explain that the Get Buffer of ScreenWriter does works as advertised if you are using two disk drives and version 2.2 He says it is best to save the entire file on drive 2 and then break it up in pieces to drive 1.

The next two questions (and answers) arrived from Bob Platt, who has recently moved to Amarillo, Texas.

//c AND //e COMPATIBILITY

Q. *Can I run software marked "Works on //c" on my Apple //e?*

A. Not always. Some software contains copy protection that makes it difficult to "break" the protection by disassembling the machine language code. One favorite trick involves placing a jump instruction on a page boundary. The 6502 chip in the //e would accidentally roll around, while the 65C02 chip in the //c solves this quirk. As a result, it is best to check the package carefully to see if it is a //c only version or whether the big red //c sticker merely means "Also works on a //c." (BFF note – the 65C02 in the //c also contains some machine language instructions that are not available in the //e and this could also cause problems.)

[*Ed. note — We believe that Apple's new //e enhancement package should reduce or eliminate incompatibility with software designed specifically for the //c.*]

APPLEWORKS AND EXTENDED 80 COLUMN CARD

Q. *I have a B revision //e with an Apple Extended 80–column card. A problem arises when using the word processor of AppleWorks. When entering text, cursor control is lost, random characters are printed on the screen, and occasionally the printer is accessed and any key press issues a linefeed. The problems usually appear after about line 32 in the text. Once these conditions occur, the system usually drops into the monitor at 3AA6 and the registers read as follows A = FF X = F2 Y = 22 P = 37 S = EA.*

A local dealer told me that the problem lies in the auxiliary memory on the 80–column card, and in a number of instances he has had to replace the 8 RAM chips on the card. The dealer said he has brought the problem to Apple's attention but they have told him that their RAM tests show there is no problem. The dealer has successfully used Texas Instruments 4146–15 RAM chips as replacements. I obtained these same chips from an electronics firm and installed them myself. The system appears to work reliably until I reach about line 92 in the text, then the identical problems recur.

I have tried using the original AppleWorks program as well as back up copies made on mine as well as another system, but the problem persists. Does this sound like a memory problem? Are you aware of any bugs in AppleWorks which appear when using the Apple Extended 80–column card?

A. Problems that may be either hardware or software are the hardest to diagnose. As far as I know there are no problems with AppleWorks, and since your problem appears to be affected by the RAM chips in the 80–column card it seems reasonable to assume the card may be responsible for at least part of the problem. However with only 30 to 90 lines of text it is unlikely that you are actually using the extra memory in the extended 80–column card. If you have problems with other programs that use the extended 80–column card this would also point to a chip problem. To verify that the chips are really causing the problem, I would put the original RAM chips back in and see if problems again occur after 32 lines of text. If this is true you might try to get another 80–column board and try it in your system. It could also be one of the other chips on the 80–column card (not the RAM chips) that is malfunctioning or operating marginally. Also try your board and software in someone else's computer. It is possible that one of your other peripheral cards is malfunctioning. To test this, remove all the cards except the disk controller card and the 80–column card of course, and see if the problem is still there. If you really get desperate you could try interchanging the motherboard RAM chips for the extended 80–column card RAM chips. I don't know what this will do but it might be interesting. If possible I would also get another independent copy of AppleWorks just to make sure your copy doesn't have a problem. If the problem still appears to be in the 80–column board, take your whole system back to the dealer who sold you the card and try to get him to find one that works. I would also write to Apple Computer with the specifics of what you were doing and the resulting prob-

lem. Writing Apple probably won't produce any results but it can't hurt. I'm sorry I can't be of more help, this appears to be a really tough problem. If anyone else has had this problem with the Apple extended 80-column card please let me know.

ACCESSING TEXT FILES FROM BASIC

Q. *I am trying to write interactive tutorials for university students. Working all in BASIC is a pain. I understand you can access text files (Applewriter?) from BASIC to simplify the writing. How do I do this, or how do I learn about it?*

A. If you have Applewriter II or IIe, or any other word processor that stores it's files as standard DOS text files, you can use it with a BASIC program to read the files. Suppose you want to display a screen of instructions from BASIC that you have typed in from Applewriter. In Applewriter, type what you want displayed with a carriage return after each line. If you are going to be using the standard 40-column Apple display in BASIC be sure and type no more than 40 characters before typing a carriage return. Save this file to disk. For this example let's save you text with the file name INSTRUCTIONS.PAGE.1. From Applesoft you simple read this as a standard sequential text file. The program segment below will read the file and print it on the screen.

```
200 HOME : REM CLEAR THE SCREEN
210 ONERR GOTO 300
220 PRINT CHR$(4)'OPEN
    INSTRUCTIONS.PAGE.1'
230 PRINT CHR$(4)'READ
    INSTRUCTIONS.PAGE.1'
240 INPUT A$ : REM READ ONE LINE
250 PRINT A$ : REM PRINT IT ON THE
    SCREEN
260 GOTO 240 : REM GO GET
    ANOTHER
300 POKE 216,0
310 PRINT CHR$(4)'CLOSE'
```

Most of this should be straightforward. Line 200 clears the screen, lines 220 and 230 prepare to read the file, line 240, 250, and 260 read the file one line at a time, print it on the screen and loop back to read another line. This continues indefinitely until there are no more lines in the text file. When this happens you get a DOS "END OF DATA" error. Normally this would stop the program but we have included a statement at line 210 that traps any errors that occur and send the program to line 300. So, the program continues to read the file until there is no more text and then jumps to line 300 in the program. Line 300 is a cryptic way of turning off the error trap. If this were not done, every error that subsequently occurred in the program would cause it to jump back to line 300. Line 310 closes the text file telling it that we no longer need it.

If you want to include commas, colons, and other punctuation in your text (and who doesn't) you will either have to replace the INPUT statement in line 240 with an Input Anything routine, or start each text line in your word processor with a quotation mark ('). Additional information can be found about text files in your DOS manual.

INTELLIGENT (?) CALENDAR

Q. *I've had a II+ for years, and updated it with ProDOS six months ago. I already had a Thunderclock, so I looked forward to the date/time feature: ProDOS, as you know, automatically uses a Thunderclock card, if one is installed. It all worked beautifully—too beautifully. The Thunderclock manual says the card provides seconds, minutes, hours, day of week, day of month, and month. For a year and a half, my card did just that. ProDOS managed to get "1984" as well. I though that it had been programmed in, and would stay as 1984; but when I checked at midnight last night, ProDOS read "January 1st, 1985." How does it do this? Why can't I reach the year from BASIC? Why didn't Thunderware tell me the year detail was buried in there?*

A. AH HA! But first, before the answer, please tell me why anybody in their right mind is playing with their computer on New Years Eve instead of celebrating... The answer is that your clock does not actually contain the year. ProDOS has an algorithm that computes the year based on the month, day, and day of the week. Since non leap years are 52 weeks plus one day long, each year starts on a new day of the week. Assuming we start in 1984 which is a leap year, this algorithm will fail on January 1, 1989. I suppose you could dig the exact algorithm out of ProDOS, but now that you know how, you should be able to figure it out for yourself. As I have personally heard many times, this is an exercise left for the student.

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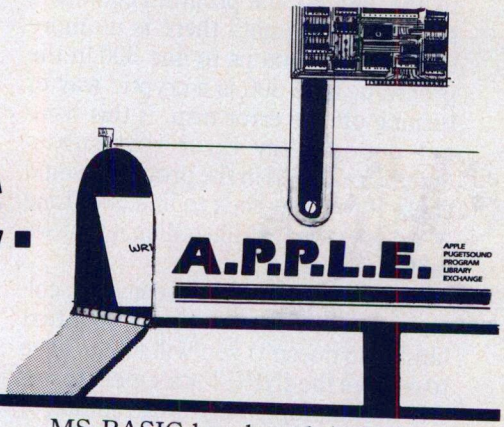

Readers' forum

European View of Mac Coverage

As a chance reader of *Call -A.P.P.L.E.*, I happened to see the October 1984 issue. Even if I weren't an Apple II user, the mere reading of your corners "32 Bit Questions" and "Member Billboard" seems to make membership profitable.

It is interesting to hear that *Call -A.P.P.L.E.* initiates a Mac Upgrade. Whoever has used a 128K Mac in the last year has deeply experienced the need of more memory (at least when trying to make MacWrite documents larger than about 22K or to run simple MS BASIC benchmarks). O.K.—let's get the upgrade.

As a regular reader of *MacWorld* I get angry any time the most recent issue comes. Even as a lover of beautifully done graphics, I curse the many unfilled spaces and the lots of MacPaint stuff in the last ten pages, while missing informative articles about Mac and Lisa issues. Thus it seems to be no question whether you should try a new newsletter covering Mac and Lisa issues only. Besides "Semaphore Signal," I miss a newsletter/computer journal solely devoted to Apple's 32 bit family. Generally, speaking, the "dream journal" I'm still waiting for is a skilled mixture of *Nibble* (with a lot of manipulatable stuff contained in full listings), the flavor of *Byte* with information about the "scene," and an exclusive Mac/Lisa coverage! Even if I fear that my dream journal will never come, any step in this direction should be welcomed.

Living outside the U.S.A. is more than a fatal misery, at least with regard to computer issues. Not to speak of delicate issues like the Lisa Toolkit/32 or the 3.0 workshop you are so frankly dealing with (in Europe, at least in Germany, Apple does not give it away, no matter whether you are a program developer or not), not to mention vivid and productive user club activities, not to speak of the fact that Apple news arrives here some months later (even by air mail!). Compared with the full range of activities as mirrored in U.S. computer magazines, it's the taste of Bulgaria, Turkey, or Swaziland, just to mention a few computer-distant regions.

Truly yours,

Peter Michael Fischer
Federal Republic
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Is Apple Listening?

Dr. Raines letter about Hackers and Big Apple is so true. Apple appears to have built an insurmountable wall to make communication with them impossible. Their policy of referring the user to their dealer is so ridiculous that it just doesn't seem possible that they are not aware of what is happening. I have gone through the same communications routine as Dr. Raines and find myself going around in frustrated circles getting nowhere with Apple. The one thing that holds us to the Apple family is that they have a good product and they know it. But why do they insist on slapping us down over and over again? Even their policy to make money hand over fist should not ignore the fact that there are millions of potential small users still out there who are not only buying new but continually changing old systems.

Their cold shoulder treatment to *Call -A.P.P.L.E.* when the Macintosh was introduced appeared to have been momentarily corrected subsequently, but was that just for a passing moment? Did you again lose communication with the decision makers at Apple? Is there no way that you can reach them to pound some sense into their heads? You and the hundreds of thousands of older Apple users can still do a great deal to support Apple against its larger competitor. Loyalty is most certainly a two-way street. If Apple and its dealers expect to get loyalty from their users they must certainly return that loyalty in kind.

George W. Falk
3475 S. Ocean Blvd, Apt 409
Palm Beach, FL 33480

Soft (shoe) ware for Joggers?

I have put this off long enough! Is there an Apple II+ program (either public domain or commercial) that I can purchase for recording my jogging statistics (and does it have graphs?)? I jog and would like to be able to keep track of the date, distance, time, and conditions (myself and environment), but I am unable to find such a jogging program. I would like a program that does more than "just keep data." One that I could manipulate,view, print, and even graph the data. Perhaps one of your readers has, or could write, a

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SURVEY

What one computer do you currently use most?

A ☐ *Apple II*
B ☐ *None*
C ☐ *Apple IIe*
D ☐ *Other (specify)*

What hardware product are you most likely to buy in the next 4 months?

E ☐ *Hard Disk*
F ☐ *5 megabyte*
G ☐ *10 megabyte*
H ☐ *20 megabyte*
I ☐ *8086 board for your Apple (run IBM P/C software)*
J ☐ *Apple keyboard (increase capability)*

What computer language would you likely purchase in the near future?

K ☐ MBASIC.MAC
L ☐ PASCAL
M ☐ MODULA 2
N ☐ ADA
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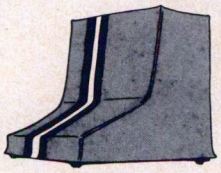

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Letters

program for this purpose.

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[Ed.—One such program that we are aware of is JOGGER. It was written by Jim Parsons and is available from Parsons Software, 1920 Briar Meadow, Arlington, TX 76014 (817) 465–4720.]

Appleworks Expansion

In the March '85 A.P.P.L.E. Doctor, Bruce Field states that "Appleworks cannot use more than 128k . . .," he then goes on to recommend an unfavorable review of Appleworks from another publication.

Perhaps Bruce should examine page 17 of your January issue, or page 7 of your February issue, or page 7 of your March issue.

The Applied engineering 'RAMWORKS' card can expand the Appleworks desktop from 55k to 101k, 200k, 400k, or 738k. Appleworks will move entirely into RAM and speed up greatly, and data base records will increase from 1300 maximum to 4800.

This memory is not just limited to the *//e*—Applied Engineering is offering a 'piggy-back' board to expand the *//c* up to 512k (413 of which will be available on the Appleworks desktop)!

If there's something about Appleworks that Bruce doesn't like, perhaps he should come right out and tell us about it—instead of recommending that prospective purchasers review negative press from another publication.

Frank Jaubert
Houston, TX

Cold ProDOS Problem

I have experienced a problem in ProDOS using CALL-3082 to clear the hi-res screen. The line HCOLOR=3 : HPLOT 0,0 : CALL-3082 produces a screenful of ??? and disconnects everything when ProDOS has just been booted by turning the machine on.

The problem doesn't occur when the boot is with PR#6, etc., and it is eliminated by preceding the CALL with an HGR. It's not a big problem, but knowing how to solve it might keep someone from running back to DOS 3.3.

Mark Cunningham

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THE MARKETPLACE

The following items are selected by our editorial staff from the large number of product announcements and news releases sent to us daily. They are presented solely to keep you informed about the current market for Apple related hardware and software. As we have not tested many of these products, appearance here does not necessarily represent endorsement or recommendation by A.P.P.L.E. Further information about items appearing in The Marketplace can be obtained through the Reader Service Card. If you contact any manufacturers directly, please mention that you learned about them in *Call-A.P.P.L.E.*

DISK REPAIR KIT RESURRECTS DEAD DATA

Penguin Software gives notice of the continuation of its line of exceptional utility software with the release of *Disk Repair Kit*, the program that breathes life into departed disks!

It is not uncommon for a floppy disk to commit suicide. When a disk expires, Disk Repair Kit can resuscitate the lost information, even on disks that appear lifeless. This program is so simple that even a novice with no programming knowledge can use it. The Disk Repair Kit can repair most damages automatically. Even if the disk catalog is completely defunct, the Disk Repair Kit can scan the remainder of the disk to find its files. It will even examine each file in several different formats to determine what it is, and reset their names and file types, if needed. If a disk is murdered by its owner, Disk Repair Kit will revive as much information as possible so that it can be copied onto another disk.

Other useful features of this new utility include the ability to format tracks selectively, map used or bad sectors on a disk, and search disks for strings or patterns of bytes.

Disk Repair Kit is currently available for DOS 3.3 on the Apple II, II+, *//e*, and *//c*. A minimum of 48K and one disk drive are required. As with all Penguin utilities software, Disk Repair Kit is not copy-protected so that users may make their own back-up copies.

The price is $29.95. For more information on Disk Repair Kit and other Penguin Software programs, please contact *Peg Smith (312) 232-1984.*

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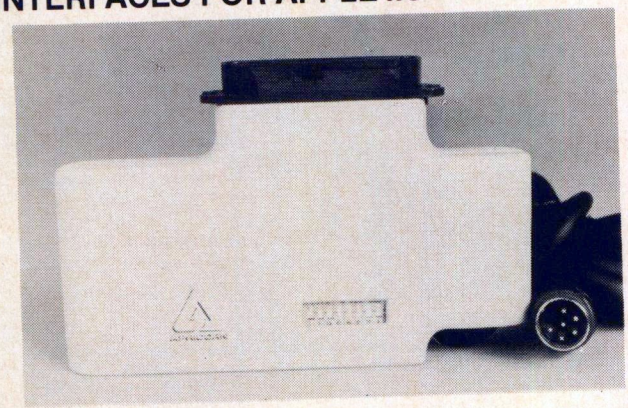
ADVANCED PARALLEL PRINTER INTERFACES FOR APPLE *//c*



Apricorn, a San Diego based manufacturer of peripheral add-on products, has introduced three parallel printer interfaces—the first of a new family of "ApriCord" products. Apricord interfaces enable the many popular Centronics-compatible parallel printers, from any manufacturer, to be connected to the "closed" serial interfaced Apple *//c*.

The parallel printer interface, dubbed the ApriCord *//c*, requires no external power supply. The ApriCord interfaces contain fewer but more advanced electronic components.

Apricorn's parallel printer interfaces, as with all other company products, carry a lifetime warranty. Price: $79.95. *Apricorn, 7050 Convoy Ct., San Diego, CA 92111 (619) 569-9483.*

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PUTTING TIME IN STITCHES

DATE TICKLER, published by Allegory & Co., is a calendar and appointment book used as a time management tool for the Apple II. Professionals, offices, and individuals can use DATE TICKLER to schedule appointments up to the year 2000. In addition, DATE TICKLER can print a calendar for any year between 1903 and 2000.

The special feature of DATE TICKLER is its "tickling" function. Once a task or appointment has been scheduled, DATE TICKLER can remind you of that date any number of days beforehand. This feature is extremely useful for professionals who have to follow a deadline for a project. DATE TICKLER has the ability to keep track of addresses, phone numbers, and other information, and can search through these information banks quickly and efficiently. Price: $37.50. For information, contact: *Allegory & Co., P.O. Box 3540, Berkeley, CA 94703, (415) 428-1156.*

Circle 3 on Reader Service Card

BREAKTHROUGH ALLOWS APPLEWORKS TO RUN ON A II+

AppleWorks, the year's top-selling microcomputer software program, was written to run exclusively on the newer Apple *//e*. Checkmate Technology has provided a means to run AppleWorks versions 1.0, 1.1, and 1.2 on the older Apple II Plus.

At the 1984 annual meeting of Apple Computer, Inc., stockholders asked for a modification of AppleWorks to allow the many Apple II+ owners to use that outstanding program. Checkmate Technology accepted the challenge to do what the Apple programmers said was "impossible." After over 400 man-hours, Checkmate has perfected a preboot software program which will quickly and simply modify a copy of AppleWorks to run with its new MultiView 80/160 column video card. This makes it possible to run ProDOS, including the Apple II Plus (as well as Franklins and some other Apple compatibles). Checkmate Technology is furnishing the AppleWorks Preboot to purchasers of the MultiView board, and also to all current registered MultiView owners, free of charge.

Checkmate's MultiView Card is the only 160-column board available with a low power design, which is within tolerance of Apple computer's allowable power consumption specification. *Checkmate Technology, 509 S. Rockford Drive, Tempe AZ 85281, 1-800-325-7347.*

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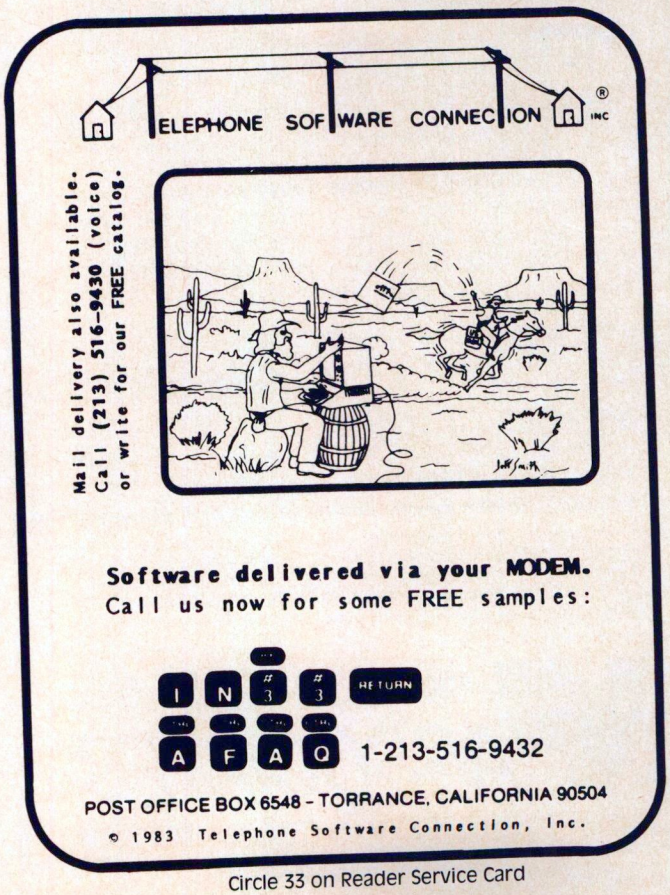
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MacinPlace

LOGO FOR THE MACINTOSH

Bellevue, WA — Microsoft Corporation announces the release of an advanced version of Logo. Logo is the next generation of the genuine Seymour Papert interactive programming language, specially adapted for the Apple Macintosh computer.

Written for users of all ages, this version of Logo is the fastest, most advanced, and most graphically powerful implementation of the innovative language. The new version supports the full Macintosh interface with new TurtleGraphics procedures and an extensible interpreter.

Logo teaches users structured programming techniques, problem solving strategies and critical abstract thinking. With its particular language syntax and modular structure, the language can be quickly grasped by novice and advanced programmers alike. With Macintosh features such as the mouse, windows control, and on-line help, Logo is easy to learn and use. The software offers a "debug" window for tracing program flow and variables, procedure formatting and comments, arrays for high-speed processing, and disk/modem random access filing. Quickdraw graphics include variable pen width, pen patterns and shape filling.

To further encourage high-level use of Logo in the academic community, Microsoft will be awarding a number of complimentary copies of Logo to several universities that have demonstrated a strong commitment to using Logo in an academic environment.

Logo is compatible with both the 128K and 512K Apple Macintosh computers. It will be available beginning April 26 through Microsoft retail outlets. The suggested retail price is $124.95. *Microsoft Corporation, 10700 Northup Way, Box 97200, Bellevue, WA 98009.*

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Macintosh Pascal, a book and software package, is available for both beginners and computer hobbyists interested in developments brought about through the Pascal programming language and the Macintosh computer. Topics discussed in this book include coverage of the operating system, text files, control structures, editing and debugging, arrays, functions and procedures, records, and graphics and sound.

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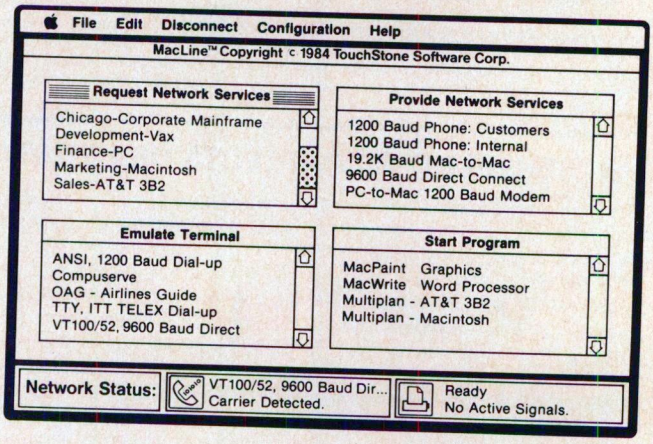

TouchStone Software Corporation is now shipping MacLine, a new Macintosh networking software package. MacLine is the third product in "The Connectables" series of compatibility software packages available from TouchStone. With the MacLine terminal emulator, users can connect their Apple Macintosh computers to a variety of other computers and information services. When MacLine is used in conjunction with the other Connectable Network products, PCworks and UniHost, the Macintosh can transfer all types of files to and from UNIX systems or PCs, exchange mail with other system users, and access a remote printer or disk.

Pricing for the MacLine Software is $145. *TouchStone Software Corporation, 909 Electric Avenue, Suite 207, Seal Beach, CA 90740, (213) 598-7746.*

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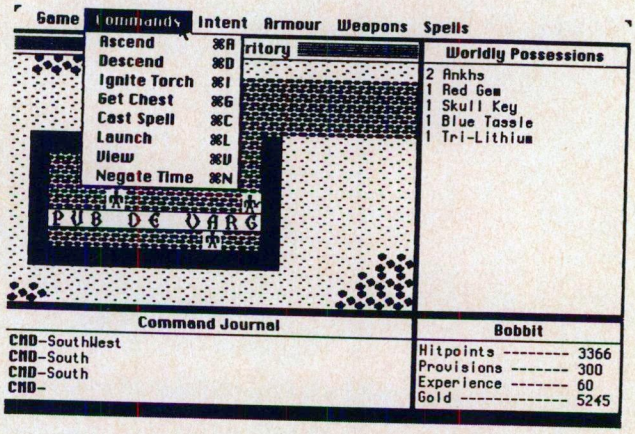
ULTIMA II FOR THE MACINTOSH



Sierra On-Line is now shipping Ultima II, the popular fantasy role playing game, for the Macintosh computer. This game really makes use of the machine's user interface. The statistics and inventories of the user's character are easily accessed from pull-down menus, and the mouse feature gives players more freedom of movement than the keyboard ever could.

This Mac product is expected to fit on one side of a 3½" disk, which is more convenient than the 3 to 5 disks required for other versions. *Sierra On-Line Inc., Sierra On-Line Building, Coarsegold, CA 93614 (209) 683-6858.*

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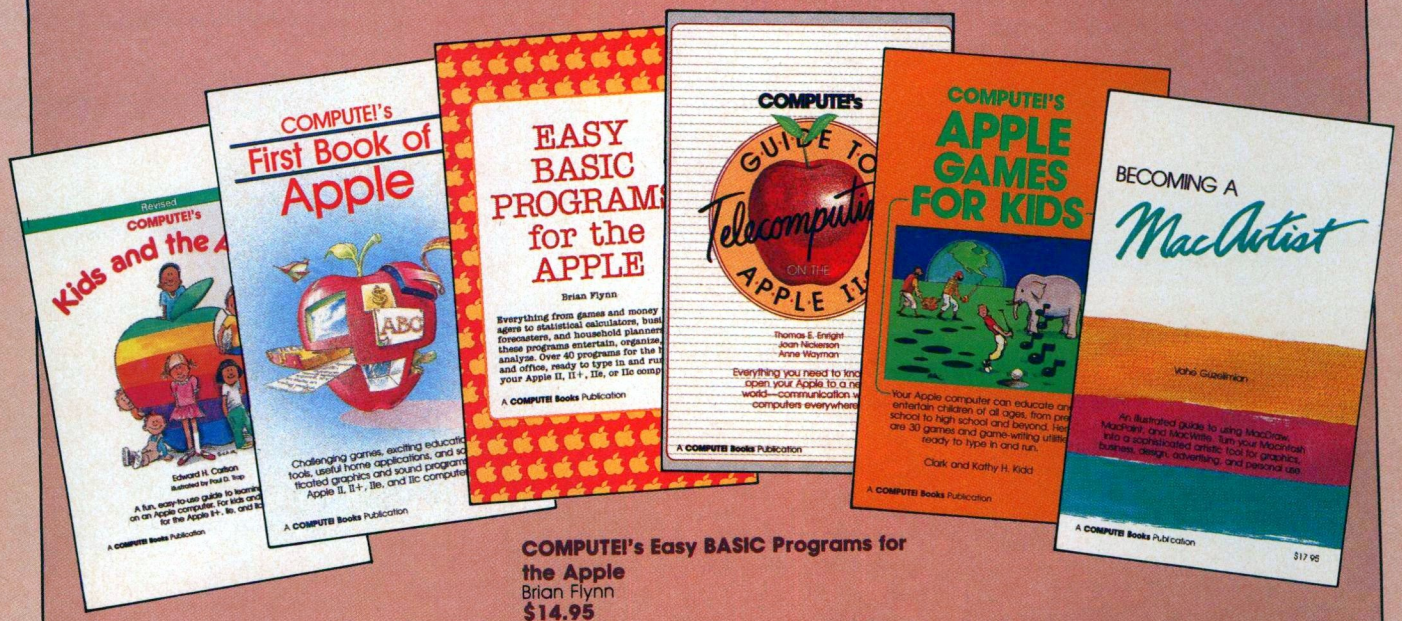

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